Supreme Court, U. S.
FILED
JUL 17 1978
MICHAEL RODAK, JR., CLERK

No. 78-95

In the Supreme Court of the United States

OCTOBER TERM, 1978

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, PETITIONERS

v.

PACCAR, INC., ET AL.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

WADE H. MCCREE, JR.,
Solicitor General,

BARBARA ALLEN BABCOCK,
Assistant Attorney General,

KENT L. JONES,
Assistant to the Solicitor General,

RONALD R. GLANCZ,
NEIL H. KOSLOWE,
Attorneys,
Department of Justice,
Washington, D.C. 20530.

INDEX

	Page
Opinion below	1
Jurisdiction	2
Questions presented	2
Statutes and regulations involved	2
Statement	2
Reasons for granting the petition	14
Conclusion	24
Appendix A	1a
Appendix B	33a
Appendix C	34a
Appendix D	44a

CITATIONS

Cases:

Automotive Parts & Accessories Association v. *Boyd*, 407 F.2d 330	15, 20, 22
B.F. Goodrich Co. v. *United States Department of Transportation*, 541 F.2d 1178, certiorari denied, 430 U.S. 930	15
Chrysler Corp. v. *Department of Transportation*, 472 F.2d 659	16, 19
Citizens to Preserve Overton Park, Inc. v. *Volpe*, 401 U.S. 402	15, 20
Coleman v. *Paccar, Inc.*, 424 U.S. 1301	9
Doraiswamy v. *Secretary of Labor*, 555 F.2d 832	8

Cases—Continued

	Page
Federal Communications Commission v. *National Citizens Committee for Broadcasting*, No. 76-1471, decided June 12, 1978	15
Federal Power Commission v. *Transcontinental Gas Pipe Line Corp.*, 423 U.S. 326	23
Frey v. *Security Insurance Co.*, 331 F. Supp. 140	16
H & H Tire Co. v. *United States Department of Transportation*, 471 F.2d 350	8
Mobil Oil Corp. v. *Federal Power Commission*, 417 U.S. 283	23
Securities & Exchange Commission v. *Chenery Corp.*, 318 U.S. 80	8
Securities & Exchange Commission v. *Chenery Corp.*, 332 U.S. 194	19, 23
Tagg Bros. & Moorhead v. *United States*, 280 U.S. 420	8
United States v. *Allegheny-Ludlum Steel Corp.*, 406 U.S. 742	15
Vermont Yankee Nuclear Power Corp. v. *Natural Resources Defense Council, Inc.*, No. 76-419, decided April 3, 1978	14, 18

Statutes and regulations:

National Traffic and Motor Vehicle Safety Act of 1966, 80 Stat. 718, as amended, 15 U.S.C. 1381 *et seq.*	2, 3, 34a
15 U.S.C. 1392(a)	3, 12, 13, 16, 34a
15 U.S.C. 1392(c)	4, 8, 34a
15 U.S.C. 1392(e)	8, 35a
15 U.S.C. 1392(f)(1)	3, 21, 23, 35a

Statutes and regulations—Continued

	Page
15 U.S.C. 1394(a)(2)	8, 9
15 U.S.C. 1395(a)	22, 38a
15 U.S.C. 1397	21, 39a
15 U.S.C. 1397(a)(1)(A)	4, 39a
15 U.S.C. 1397(a)(1)(C)	13, 18, 39a
15 U.S.C. 1399(a)	19
15 U.S.C. 1401(a)(1)	22
15 U.S.C. 1403	4, 40a
5 U.S.C. 706(2)(A)	15
28 U.S.C. 2112	8
Federal Motor Vehicle Safety Standard No. 121, 49 C.F.R. 571.121 *et seq.*, as amended	2, 44a
49 C.F.R. 1.50(a)	3

Miscellaneous:

32 Fed. Reg. 14278 (1967)	4
35 Fed. Reg. 10368 (1970)	4
36 Fed. Reg. (1971):	
p. 3817	6
pp. 3819-3820	6
37 Fed. Reg. (1972):	
p. 3905	7
p. 3907	7
39 Fed. Reg. (1974):	
p. 804	7
p. 7966	7
p. 17563	7
p. 28161	7
p. 39880	7, 17
p. 39881	6, 7

Miscellaneous—Continued	Page
40 Fed. Reg. (1975):	
p. 52856	10
p. 59223	10, 17
p. 59224	10
41 Fed. Reg. (1976):	
p. 8784	4
p. 8785	4
pp. 8785-8786	10, 17
p. 8786	16, 17, 20
pp. 8785-8789	11
Federal Rules of Appellate Procedure:	
Rule 15(a)	8
Rule 16	8
H.R. Conf. Rep. 1919, 89th Cong., 2d Sess. (1966)	22
H.R. Rep. No. 1776, 89th Cong., 2d Sess. (1966)	3, 16
S. Rep. No. 1301, 89th Cong., 2d Sess. (1966)	3, 4

In the Supreme Court of the United States

OCTOBER TERM, 1978

No.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, PETITIONERS

v.

PACCAR, INC., ET AL.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

The Solicitor General, on behalf of the National Highway Traffic Safety Administration and the Department of Transportation, petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Ninth Circuit in this case.

OPINION BELOW

The opinion of the court of appeals (App. A, *infra*, pp. 1a-32a) is reported at 573 F.2d 632.

JURISDICTION

The judgment of the court of appeals (App. B, *infra*, p. 33a) was entered on April 17, 1978. The jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

QUESTIONS PRESENTED

1. Whether the National Highway Traffic Safety Administration (NHTSA) acted arbitrarily or capriciously in determining that its performance standard for air-braked trucks was "practicable" at the time of its promulgation or at the time of its subsequent implementation.

2. Whether NHTSA must conduct independent tests to "assure" the reliability of equipment designed by manufacturers to meet safety performance standards.

STATUTES AND REGULATIONS INVOLVED

The relevant provisions of the National Highway Traffic and Motor Vehicle Safety Act of 1966, 80 Stat. 718, as amended, 15 U.S.C. 1381 *et seq.*, are reproduced in App. C, *infra*, pp. 34a-43a.

Federal Motor Vehicle Safety Standard No. 121, 49 C.F.R. 571.121 *et seq.*, as amended to the date the court of appeals took this case under submission, is reproduced in App. D, *infra*, pp. 44a-74a.

STATEMENT

Federal Motor Vehicle Safety Standard No. 121 ("the Standard"), which became effective for tractor-trailers on January 1, 1975, and for trucks and buses on March 1, 1975, establishes safety performance requirements, including braking-distance limitations, for air-braked vehicles. This case involves the braking-distance limitations and testing requirements established by the Standard.

1. The National Traffic and Motor Vehicle Safety Act of 1966, 80 Stat. 718, as amended, 15 U.S.C. 1381 *et seq.* (the "Safety Act"), is designed "to reduce traffic accidents and deaths and injuries to persons resulting from traffic accidents" (15 U.S.C. 1381). It authorizes the Secretary of Transportation to establish mandatory safety standards applicable to all motor vehicles.[1] Safety standards "shall be practicable, shall meet the need for motor vehicle safety, and shall be stated in objective terms." 15 U.S.C. 1392(a). In issuing safety standards, the Secretary must give consideration to "relevant available motor vehicle safety data, including the results of research, development, testing and evaluation activities * * *." 15 U.S.C. 1392(f)(1). "[S]afety shall be the overriding consideration" in adopting each standard. S. Rep. No. 1301, 89th Cong., 2d Sess. 6 (1966); see H.R. Rep. No. 1776, 89th Cong., 2d Sess. 16 (1966).

New safety standards shall not take effect sooner than 180 days after promulgation, or later than one year after promulgation, "unless the Secretary finds, for good cause shown, that an earlier or later effective

[1] The Secretary delegated these powers to the Administrator of NHTSA (49 C.F.R. 1.50(a)).

date is in the public interest * * *." 15 U.S.C. 1392 (c). Once a motor vehicle safety standard has become effective, every manufacturer or distributor of vehicles or equipment subject to the standard must certify that its vehicles or equipment conform to the standard. 15 U.S.C. 1403. The manufacture or sale of vehicles or equipment not in compliance with the standard is prohibited. 15 U.S.C. 1397(a)(1)(A).

2. NHTSA's predecessor agency published notice on October 14, 1967, that it was considering the adoption of safety standards for trucks, buses, trailers, and similar heavy vehicles (32 Fed. Reg. 14278). After evaluating the comments received in response to this proposal and reviewing the results of the several studies performed for the agency by independent research organizations, the agency concluded that heavy, air-braked vehicles were disproportionately responsible for fatal and other serious highway accidents.

The agency's investigation indicated that the most significant causes of these excessive serious accidents were the substantially inferior braking and control of these vehicles during stopping and turning maneuvers (see 41 Fed. Reg. 8784 (1976)). The agency found that existing air-brake systems in heavy vehicles were inadequate to stop the vehicles in relatively short distances at typical highway speeds, and also caused wheel "lockup" and resultant loss of directional control (*ibid.*).[2] The agency then consulted

[2] The agency awarded a research contract in 1969 to the Highway Safety Research Institute of the University of Michigan to determine whether existing air-brake systems could be improved with respect to stopping distances and "lockup." The Institute undertook a comprehensive study of heavy vehicle brake performance (referred to in the record as the "Murphy Report") and concluded that "the braking performance of buses, trucks and tractor-trailers * * * is, on the average, less than that for passenger cars and certainly less than the maximum performance achievable" (Murphy Report 1). It stressed that "[p]revention of wheel lockup appears to be the greatest deterrent" to vehicle instability during braking (*id.* at 17). Accordingly, it recommended more effective brakes, to reduce the disparity between the stopping capabilities of air-braked vehicles and passenger vehicles, and the installation of equipment to prevent wheel lockup (*id.* at 3-4).

with representatives of the heavy vehicle manufacturing industry, and with an "outside task force" of experts on heavy vehicle manufacture and use; these sources reported that the technology was available to shorten stopping distances and reduce wheel lockup on heavy vehicles (see 41 Fed. Reg. 8785).

On June 25, 1970, after three years of research, study, and evaluation, the agency proposed a new motor vehicle safety standard "to establish requirements for air brake systems on trucks and buses" (35 Fed. Reg. 10368). In light of congressional instructions that motor vehicle safety standards "are expected to be performance standards, specifying the required minimum safe performance of vehicles but not the manner in which the manufacturer is to achieve the specified performance" (S. Rep. No. 1301, 89th Cong., 2d Sess. 6 (1966)), the agency proposed a braking-distance performance standard and gave manufacturers a free hand in selecting and develop-

ing equipment to meet the standard. The proposed standard fixed maximum stopping distances for vehicles at different speeds and on specified dry and wet pavement surfaces, and it required that vehicles be able to stop in a straight line without locking their wheels (36 Fed. Reg. 3817, 3819-3820 (1971)). The proposed standard was adopted by NHTSA on February 27, 1971, with an effective date of January 1, 1973 (36 Fed. Reg. 3817).

Most manufacturers reacted to the Standard by installing stronger braking systems. They sought to make the new, stronger brakes operate efficiently and without lockup by installing "antilock" devices in the vehicles. The antilock device "consists of a minicomputer attached to each axle of the truck or tractor-trailer which 'senses' when a wheel begins to lock and momentarily releases the brake to regain traction" (App. A, *infra*, p. 9a). These devices were already in use on some passenger cars and on aircraft (*id.* at 19a). Because some manufacturers were concerned that the antilock devices themselves might present safety problems, NHTSA collected and analyzed test data from antilock manufacturers; these data showed that the devices had been rigorously examined and presented no safety problems (see 39 Fed. Reg. 39881 (1974)).

On November 12, 1974, after twice delaying implementation of the Standard to permit further study of antilock devices,[3] NHTSA declared that the Stand-

[3] As manufacturers began to design and produce complying air-brake systems, NHTSA monitored their efforts and re-

ard's key provisions were final for purposes of judicial review (39 Fed. Reg. 39880). NHTSA pointed out that its engineering staff had monitored antilock production and testing to determine that the devices were available and reliable, and that proprietary data it had received from manufacturers showed "millions of axle miles of antilock operation with a malfunction rate comparable to other equipment presently in highway service, and no highway accidents attributable to the device" (*id.* at 39881).

3. On January 3, 1975, respondent Paccar, Inc., a truck manufacturer, filed a petition for judicial review of the Standard.[4] During the pendency of the review proceeding, additional evidence bearing on the practicability of antilock devices was submitted to NHTSA in the form of petitions for modification or

sponded to the problems they encountered. Thus, to "permit a longer period of fleet testing to evaluate the durability of the new systems" (37 Fed. Reg. 3907 (1972)), NHTSA postponed the scheduled effective date first to September 1, 1974, for all vehicles (37 Fed. Reg. 3905) and then to January 1, 1975, for trailers and March 1, 1975, for trucks and buses (39 Fed. Reg. 804; 39 Fed. Reg. 7966; 39 Fed. Reg. 17563; 39 Fed. Reg. 28161 (1974)).

[4] Respondent Truck Equipment & Body Distributors Association, Inc. ("TEBDA"), an organization representing manufacturers who modify truck chassis to produce dump trucks, cement trucks, garbage trucks, and other special purpose vehicles, filed a petition for judicial review in the United States Court of Appeals for the Sixth Circuit. A third petition for judicial review was filed by respondent American Trucking Associations, Inc. ("ATA") in the District of Columbia Circuit. These petitions were transferred to the Ninth Circuit and consolidated for review.

amendment of the Standard pursuant to 15 U.S.C. 1392(e). Paccar asked the court of appeals to issue an order that this additional evidence be identified as part of the record in this case. The court ordered NHTSA periodically to supplement the record with (1) all additional data received by the agency in applications for amendment of the Standard,[5] and (2)

[5] A petition for review ordinarily confers jurisdiction on the court of appeals only for the purpose of determining the validity of the order specifically challenged in the petition, and such review is to be limited to the record relied on by the agency in issuing the challenged order. See 28 U.S.C. 2112; *Securities & Exchange Commission* v. *Chenery Corp.*, 318 U.S. 80, 87; *Tagg Bros. & Moorhead* v. *United States*, 280 U.S. 420, 444; *Doraiswamy* v. *Secretary of Labor*, 555 F.2d 832, 839-841 (C.A.D.C.); see also Fed. R. App. P. 15(a), 16. The provisions for judicial review under the Safety Act, however, are somewhat more expansive. In recognition of the practical difficulties that may be encountered (and evidence that may be developed) between the initial promulgation and the delayed implementation of federal safety standards (see 15 U.S.C. 1392(c)), Congress provided that a petitioner seeking review of a safety standard may apply to the reviewing court for leave to introduce new evidence into the record that was not reasonably available for submission in the proceeding before the agency. 15 U.S.C. 1394(a)(2). On receipt of such an application, the court may direct the agency to consider the new evidence and make such responsive findings or recommendations as the agency deems appropriate. The agency's findings, along with the additional evidence, are then to be returned to the court for inclusion in the record for judicial review (*ibid.*). See *H & H Tire Co.* v. *United States Department of Transportation*, 471 F.2d 350, 353 n. 10 (C.A. 7).

As a result of the application of this provision in this case, the court received, as part of the record to be reviewed, post-promulgation evidence of antilock equipment failures and the findings made by the agency in response to this evidence. Although we do not believe that the court of appeals should have ordered NHTSA to provide it with every new document it received, we do not contend that the evidence actually submitted could not have been received by the court under appropriately limited orders pursuant to 15 U.S.C. 1394(a)(2). Accordingly, the agency's post-promulgation findings, as well as the initial decision to promulgate the challenged safety standard, were properly before the court of appeals in this case.

the agency's response to such data.

In December 1975 NHTSA requested the court to defer consideration of the petition for review until the agency had amended the Standard to reflect the agency's evaluation of the post-promulgation evidence of antilock equipment performance. The court postponed the oral argument in response to the agency's request.[6]

In its review of the post-promulgation evidence presented by some manufacturers about the difficulties that had been confronted in implementing the brak-

[6] The court of appeals also entered an order staying the effectiveness of the Standard for an indefinite period. The stay was vacated by Mr. Justice Rehnquist. *Coleman* v. *Paccar, Inc.*, 424 U.S. 1301. Mr. Justice Rehnquist determined that the Court (and the Circuit Justices) have jurisdiction to vacate a stay "where it appears that the rights of the parties to a case pending in the court of appeals, which case could and very likely would be reviewed here upon final disposition in the court of appeals, may be seriously and irreparably injured by the stay, and the Circuit Justice is of the opinion that the court of appeals is demonstrably wrong in its application of accepted standards in deciding to issue the stay" (424 U.S. at 1303-1304). Mr. Justice Rehnquist concluded that the court of appeals failed properly to consider the applicant's probability of success on the merits and the irreparable injury that the stay would cause to the federal safety program (*id.* at 1306-1307).

ing-distance limitation, NHTSA made the following findings:[7]

> 1. Thousands of vehicles have been manufactured with antilock systems that have not reported any safety-related defects (40 Fed. Reg. 59223 (1975); 41 Fed. Reg. 8785-8786 (1976)).
>
> 2. Several large users and manufacturers of heavy vehicles had found that antilock-equipped vehicles can meet the standard's braking-distance requirements and provide good performance handling (40 Fed. Reg. 59223 (1975); 41 Fed. Reg. 8785-8786 (1976)).
>
> 3. Although some manufacturers complained of malfunctioning antilock equipment, these difficulties stemmed from the manufacturers' selection of devices that were not best suited for their vehicles (40 Fed. Reg. 59223 (1975); 41 Fed. Reg. 8785-8786 (1976)).
>
> 4. An extension of the braking-distance limitation from 277 feet to 293 feet (at 60 mph) would obviate the need for antilock devices on many of the vehicles subject to the standard (40 Fed. Reg. 59224 (1975)), and would prevent safety concerns claimed to result from overpowered front brakes on heavy vehicles (*ibid.*).

With these considerations in mind, the agency adopted the proposed extension of the braking-distance limitation in March 1976 (41 Fed. Reg. 8785-8789). The issues finally presented to the ocurt of appeals in July 1976, therefore, concerned both the agency's action in promulgating the standard in November 1974 and its review and disposition in March 1976 of claims of practical difficulties in implementing the standard.

[7] This review pertained to trucks and tractor-trailers. The application of the Standard to buses was postponed (40 Fed. Reg. 52856 (1975)), and the rules for buses were thus not at issue in the court of appeals.

4. The court of appeals held that the record demonstrates a "need" for the Standard under the Safety Act because the objectives of reducing stopping distances and improving handling during stops for heavy vehicles are substantially related to the goal of improving highway safety (App. A, *infra*, pp. 16a-18a). The court concluded, however, that the Standard's braking-distance limitation was "neither reasonable nor practicable at the time it was put into effect" (*id.* at 18a).

The court acknowledged that, before it promulgated the standard, NHTSA had confirmed the reliability of antilock devices on the basis of extensive proprietary data from antilock manufacturers (App. A, *infra*, p. 10a), that the devices had been used successfully on airplanes and cars, and that at least "some trucks" had been able to meet the braking-distance limitations of the standard (*id.* at 19a). The court stated, however, that "critical" (*ibid.*) and "unanticipated" (*id.* at 20a) problems developed with the mass production of vehicles designed to meet the standard by the use of antilock devices. Although the court acknowledged that "[t]he absolute number of

vehicles * * * [evidencing antilock problems] is quite small" (*id.* at 22a), it thought that there was a "strong probability" that antilock devices do not work well (App. A, *infra*, p. 26a).

Where such evidence of potential equipment failure develops, the court stated, "NHTSA has the responsibility to *assure* that the new systems it requires are reliable when placed in use" (App. A, *infra*, p. 23a; emphasis added). The court ruled that the agency could not satisfy this burden by relying on the absence of any reports of highway accidents related to the use of antilock equipment, or on evidence from manufacturers, or on tests conducted by NHTSA on three trucks in 1975, even though these indicia show that antilock devices are effective (*ibid.*). NHTSA must conduct "more intensive testing," the court concluded, to develop "probative and convincing data evidencing the reliability and safety of vehicles that are equipped with antilock [devices]" before the agency can adopt the braking-distance limitation in the standard (*id.* at 25a, 26a). In light of its conclusion about the antilock devices, the court held that the 293-foot braking-distance limitation in the Standard is not "practicable" (see 15 U.S.C. 1392(a)), and therefore concluded that the Standard is invalid.

The court also held that the Standard is neither "practicable" nor "objective" because it does not specify a procedure—other than road testing—that manufacturers may follow to fulfill their statutory duty to exercise "due care" in certifying vehicles to be in compliance with the Standard (App. A, *infra*,

p. 31a; see 15 U.S.C. 1397(a)(1)(C)).[8] The court stated that the road testing procedure in the Standard is not economically feasible for "intermediate and final stage manufacturers" (App. A, *infra*, pp. 30a-32a; see note 4, *supra*), and it held that the agency has a duty to "propose some alternative [compliance] method for those manufacturers * * *" (App. A, *infra*, p. 31a). The court declined to accept the agency's interpretation of the regulation as permitting manufacturers to comply with the statutory "due care" requirement "by any number of alternative methods, such as group testing [and] mathematical

---

[8] The court also held that one of the Standard's specific testing requirements is invalid (App. A, *infra*, pp. 26a-32a). The Standard requires vehicles to meet stopping distance requirements on both dry and wet pavement surfaces. In order to permit uniform testing, NHTSA specified "skid numbers" for the dry and wet surfaces. The "skid numbers" are objective measures of the frictional resistance of pavement under specified conditions (App. A, *infra*, pp. 26a-27a). Although the court agreed that the testing requirements are "objective," it held that they are not "practicable," as required by the statute, 15 U.S.C. 1392(a). The court stated that, because the skid number of a given surface could fluctuate depending on weather conditions, manufacturers using a particular test track could not "assure that their vehicles will exactly meet the objective standard when tested by NHTSA" (App. A, *infra*, p. 28a). We disagree with this decision; indeed, the court's conclusion that the testing requirements are not practicable seems refuted by the court's finding that manufacturers *can* comply with the testing procedure by "overcompensat[ing]" (App. A, *infra*, p. 28a). The court of appeals did not dispute NHTSA's contention that precision is impossible and that the "overcompensation" required is not significant. Because NHTSA intends to issue new testing requirements, however, we do not present this issue to the Court.

calculations * * *" (App. A, *infra*, p. 31a). The court held that compliance alternatives under the Standard must be stated "without ambiguity" (*id.* at 32a).

REASONS FOR GRANTING THE PETITION

The court of appeals' decision in this case amounts to a substitution of judicial for administrative judgment in a manner repeatedly condemned by this Court and other courts of appeals. We ordinarily would not seek review of such a decision—wrong though it may be—because the governing principles are so well established, and a decision such as this turns more on the application of acknowledged principles to particular facts than on any dispute about the controlling legal rules. This case, however, is exceptional. The Standard at issue here is an especially important part of NHTSA's attempt to reduce highway fatalities, and its invalidation could lead to deaths and injuries that should be prevented. It is impossible to predict the number of additional accidents that will be caused by the invalidation of the Standard, but the court of appeals' own conclusion on the need for the Standard (App. A, *infra*, pp. 16a-18a) suggests that there will be some. Moreover, the testing and research requirements established by the court of appeals are a formula for administrative paralysis, and they threaten to hinder the repromulgation of the Standard and the consideration of other safety-related rules.

1. The role of a court reviewing an administrative decision "is a limited one." *Vermont Yankee Nuclear*

Power Corp. v. *Natural Resources Defense Council, Inc.*, No. 76-419, decided April 3, 1978, slip op. 33. A safety standard promulgated by NHTSA under the Safety Act is informal rulemaking, and therefore it should be upheld unless it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. 706(2)(A). See *B.F. Goodrich Co.* v. *United States Department of Transportation*, 541 F.2d 1178, 1181-1182 (C.A. 6), certiorari denied, 430 U.S. 930; cf. *United States* v. *Allegheny-Ludlum Steel Corp.*, 406 U.S. 742, 757. A court's "paramount objective" in reviewing regulations under the Safety Act "is to see whether the agency, given an essentially legislative task to perform, has carried it out in a manner calculated to negate the dangers of arbitrariness and irrationality * * *." *Automotive Parts & Accessories Association* v. *Boyd*, 407 F.2d 330, 338 (C.A.D.C.). Review under this standard is narrow, and the reviewing "court is not empowered to substitute its judgment for that of the agency." *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, 401 U.S. 402, 416. A court should uphold a reasoned agency decision, even though the propriety of the decision cannot be established by convincing proof. *Federal Communications Commission* v. *National Citizens Committee for Broadcasting*, No. 76-1471, decided June 12, 1978, slip op. 19-20, 25-32, 36. The court of appeals disregarded these principles in this case.

The court of appeals held that, because problems had arisen in antilock devices made by certain firms,

it was arbitrary and capricious for NHTSA to conclude that the braking-distance limitation in the Standard is "practicable," as the Act requires, 15 U.S.C. 1392(a) (App. A, *infra*, p. 18a). The fact that manufacturers may encounter difficulties in complying with a safety standard, however, does not necessarily indicate that the standard is not "practicable." [9] A safety requirement that calls for difficult or expensive measures may nonetheless be "practicable" if it is technologically capable of being accomplished. See H.R. Rep. No. 1776, 89th Cong., 2d Sess. 16 (1966). Indeed, in adopting safety standards, the agency may "require improvements in existing technology or * * * the development of new technology * * * in accord with the Congressional mandate that 'safety shall be the overriding consideration in the issuance of standards.'" *Chrysler Corp.* v. *Department of Transportation*, 472 F.2d 659, 673 (C.A. 6). The requirement of practicability means simply that the safety standard may not call for more than can feasibly be accomplished within the time provided.[10]

[9] The fact that some manufacturers claim to have experienced difficulties with antilock equipment cannot by itself mean that the standard is impractical. If it did, then a manufacturer could defeat implementation of a safety standard merely by employing improper technology (see 41 Fed. Reg. 8786 (1976)). The agency was justifiably concerned that its standard not reflect only the lowest common denominator in manufacturing competence.

[10] Cf. *Frey* v. *Security Insurance Co.*, 331 F. Supp. 140, 143 (W.D. Pa.) ("'Practicable' means feasible in the circumstances").

NHTSA gave repeated, substantial consideration to the practicability of its brake-distance limitation (see, *e.g.*, 41 Fed. Reg. 8786 (1976); 40 Fed. Reg. 59223 (1975); 39 Fed. Reg. 39,880 (1974)). The agency found that several manufacturers have successfully developed and installed antilock devices in heavy truck assemblies (see page 10, *infra*). Major users have reported successful compliance by "judicious selection of antilock componentry * * *" (40 Fed. Reg. 59223 (1975)). Moreover, representatives of the heavy vehicle manufacturing industry repeatedly have told the agency that the industry is technologically able to comply with the Standard (see 41 Fed. Reg. 8785-8786 (1976).[11] Tests performed by NHTSA in 1975 on three antilock-equipped trucks also revealed that the heavy-truck industry possesses the necessary technology to meet the standard (see App. A, *infra*, p. 25a). The agency reasonably concluded from this evidence that the braking-distance limitation in the standard may be met by use of available technology. Under the Safety Act, this is sufficient to

[11] As of the date this case was submitted to the court of appeals, three manufacturers of antilock equipment had not reported a single safety-related defect in the performance of the equipment. This establishes that antilock devices can be made by those who strive to meet the Standard's requirement (41 Fed. Reg. 8786 (1976)). Moreover, the fact that respondents Paccar and TEBDA certify daily that their antilock-equipped vehicles comply with all the requirements of the Standard at least places in question their allegation that antilock devices do not work. NHTSA advises us that, to date, approximately 1 million vehicles have been certified by their manufacturers as complying with the Standard.

establish that the Standard is "practicable." The court of appeals' conclusion, in the face of this evidence, that the agency's judgment was arbitrary or capricious "deprive[s] those words of any meaning." *Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Council, Inc., supra,* slip op. 32.

The court's further determination that the Standard is not "practicable" because it does not specify compliance procedures for intermediate and final stage manufacturers is also erroneous. The court did not find that it is not "practicable" for these manufacturers to employ "due care" in certifying their vehicles to be in compliance with the Standard. Instead, the court stated that an unelaborated "due care" requirement is improper because it is too ambiguous (App. A, *infra,* p. 32a). But the requirement that manufacturers exercise "due care" in certifying that vehicles meet the Standard is established by the statute, 15 U.S.C. 1397(a)(1)(C), and not by the regulation.[12] There is nothing in the language or history of the statutory requirement to suggest that Congress intended that "due care" be defined in general regulations rather than on a case-by-case basis. In particular, there is no support for the court's conclu-

[12] The regulation does not, on its face, establish compliance procedures for manufacturers. The road testing provisions of the Standard merely constitute part of the objective specification of the braking-distance limitation. While compliance with the road testing procedures during certification may constitute due care as required by the statute, the agency has never taken the position that road testing is required to establish due care. See App. A, *infra,* p. 31a.

sion that the inherently flexible "due care" requirement of the statute must be implemented by the agency in language "drafted without ambiguity" (App. A, *infra,* p. 32a). The court's decision has thus usurped the agency's discretion to determine whether to proceed by regulation or on a case-by-case basis to implement the statutory due care requirement.[13] See *Securities & Exchange Commission* v. *Chenery Corp.,* 332 U.S. 194, 202-203.

2. The court of appeals sought to justify its conclusion that the agency has acted arbitrarily and capriciously in adopting the braking-distance limitation in the Standard by stating that "NHTSA has the responsibility to assure that the new systems it requires are reliable when placed in use" (App. A, *infra,* p. 23a).[14] Although the court acknowledged that NHTSA had made a determination of reliability on the basis of (1) extensive proprietary data from antilock manufacturers showing millions of axle miles

[13] Where the Secretary suspects that a manufacturer is in violation of any requirement of the Standard, the Secretary may give notice to the suspected violator and afford him an opportunity to demonstrate his compliance. 15 U.S.C. 1399(a).

[14] The court of appeals stated that the Sixth Circuit had applied such a requirement in *Chrysler Corp.* v. *Department of Transportation,* 472 F.2d 659, 673. That case, however, held only that complaints of equipment malfunction should be reviewed by NHTSA to determine whether a safety standard should be deferred, modified or abandoned. The court did not state, or even suggest, that NHTSA has a duty to "assure" equipment reliability by "intensive testing," as the court of appeals has held in this case (see App. A, *infra,* pp. 23a, 25a).

of reliable performance; (2) the absence of significant reports of safety-related defects in the devices, which were in use on some passenger cars and aircraft; and (3) its own sample testing of complying vehicles (*id.* at 10a, 24a-25a), the court found these evidence-gathering techniques to be "inadequate" (*id.* at 25a). Because of a "quite small" number of reported antilock equipment malfunctions (*id.* at 22a), the court held, NHTSA must conduct "intensive testing" to develop "convincing data" establishing the reliability of antilock equipment.[15]

The court of appeals erred both in its statement that NHTSA must "assure" the reliability of manufacturer's equipment and in its holding that only intensive scientific testing, rather than substantial industry experience, may be relied on by NHTSA in determining that the safety standard is practicable.

a. We argued above that the agency may require manufacturers to develop and implement safety de-

[15] The agency reviewed the claims of equipment malfunction in March 1976. NHTSA found that the claimed malfunctions present only "an extremely small chance" that an actual safety hazard would result, because a malfunctioning antilock system disables itself and "return[s] braking to normal" (41 Fed. Reg. 8786). The agency concluded that "the risk of malfunction [is] small and out-weighed by the benefits" of implementing the technology (*ibid.*). This evaluation of competing considerations is well within the discretion properly conferred on the agency. See *Automotive Parts & Accessories Association* v. *Boyd*, 407 F.2d 330, 342 (C.A.D.C.). The court of appeals did not indicate, or even discuss, whether the agency's judgment in this regard was "clear error." See *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, *supra*, 401 U.S. at 416.

vices that are technologically feasible, even if expensive or complex (see page 16, *supra*). Once the technological competence exists to implement a practicable standard, it is the duty of the manufacturers, not of the agency, to select and install reliable equipment to achieve the safety performance standard. 15 U.S.C. 1397.[16] The court of appeals' misallocation of these duties under the Safety Act produces the unfortunate result that an intransigent industry—or even a handful of intransigent or incompetent members of an industry—may impede implementation of a technologically and economically practicable safety standard merely by ineptly employing available technology. It was error for the court to hold that, because some noncomplying vehicles have been made, the agency may not enforce the Standard that was designed to bring about compliance.

b. In determining whether a proposed safety standard is practicable, NHTSA must consider "relevant available motor vehicle safety data, including the results of research, development, testing and evaluation activities conducted pursuant [to the Act]." 15 U.S.C. 1392(f)(1). This provision does not require the agency to use any particular type of evidence in the rule-making procedure. Although Congress authorized the agency to "conduct research, testing, development, and training necessary to carry out the

[16] Indeed, Congress intended that the agency issue performance standards only and allow industry to select and implement the necessary equipment. See page 5, *supra*.

purposes of [the Act,]" 15 U.S.C. 1395(a), it did not circumscribe the agency's discretion to decide what kinds of evidence and which evidence-gathering techniques are best suited for particular aspects of its decisional process. The court of appeals' holding that the Safety Act "commanded" NHTSA to conduct research about the reliability of equipment developed by manufacturers to comply with safety standards is therefore unsupported.[17] Neither "convincing data" nor affirmative "proof" based on research and testing is required.[18]

In the first place, the court of appeals' analysis misplaces the burden of proof. When a legislative rule such as is involved here is challenged,[19] the opponent of

---

[17] The court of appeals relied in part on 15 U.S.C. 1401(a)(1), for its conclusion that NHTSA has an affirmative duty to conduct reliability tests on manufacturers' equipment (App. A, *infra*, p. 24a). This provision authorizes the Secretary to "conduct any inspection or investigation * * * which may be necessary to enforce" motor vehicle safety standards. Nothing in the language or history of this provision suggests that by "authorizing" the Secretary to conduct such investigations Congress meant to "require" the Secretary to conduct investigations as a condition precedent to the enforcement of a federal safety standard. See H.R. Conf. Rep. No. 1919, 89th Cong., 2d Sess. 20 (1966).

[18] Even if "testing" is the only permissible evidentiary procedure, NHTSA relied in part on the successful results of tests conducted in 1975 on antilock-equipped trucks (see App. A, *infra*, pp. 24a-25a), and it received from manufacturers reports that also apparently rested on tests and experience (*id.* at 10a).

[19] See *Automotive Parts & Accessories Association* v. *Boyd*, *supra*, 407 F.2d at 338.

the rule, and not the agency, bears the "heavy burden" of showing that the agency's determination was outside the bounds of its discretion. See *Mobil Oil Corp.* v. *Federal Power Commission*, 417 U.S. 283, 316. Moreover, "[a]t least in the absence of substantial justification for doing otherwise," a reviewing court is not to "dictat[e] to the agency the methods, procedures, and time dimension of the needed inquiry * * *." *Federal Power Commission* v. *Transcontinental Gas Pipe Line Corp.*, 423 U.S. 326, 333. The court of appeals did not identify a "substantial justification" for its "research" requirement here; the statute simply calls for the agency to exercise its informed judgment in light of "relevant available motor vehicle safety data." 15 U.S.C. 1392(f)(1). By dictating the agency the forms of technical evidence that may be considered in the rulemaking proceeding, the court of appeals improperly entered "the domain which Congress has set aside exclusively for the administrative agency." *Federal Power Commission* v. *Transcontinental Gas Pipe Line Corp.*, *supra*, 423 U.S. at 333, quoting *Securities & Exchange Commission* v. *Chenery Corp.*, 332 U.S. 194, 196. Where, as in this case, the agency relied on available evidence to reach a reasoned decision, the court has no authority to impose an additional requirement that the evidence be "convincing" or be based on "intensive testing."

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

WADE H. MCCREE, JR.,
Solicitor General.

BARBARA ALLEN BABCOCK,
Assistant Attorney General.

KENT L. JONES,
Assistant to the Solicitor General.

RONALD R. GLANCZ,
NEIL H. KOSLOWE,
Attorneys.

JULY 1978.

APPENDIX A

UNITED STATES COURT OF APPEALS
NINTH CIRCUIT

Nos. 75-1017, 75-2831 and 75-3182

PACCAR, INC., PETITIONER

v.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, RESPONDENTS

TRUCK EQUIPMENT & BODY DISTRIBUTORS ASSOCIATION, PETITIONER

v.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, RESPONDENTS

AMERICAN TRUCKING ASSOCIATION, PETITIONER

v.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, RESPONDENTS

April 17, 1978

Before BROWNING, ELY and TRASK,
Circuit Judges

ELY, Circuit Judge:

Paccar, Inc., the builder of Kenworth and Peterbilt trucks, the American Trucking Associations, Inc. (ATA) and the Truck Equipment and Body Distributors Association (TEBDA) challenge Motor Vehicle Safety Standard No. 121 (the Standard) regulating air-braked trucks and tractor-trailers.[1] The Standard was issued by the National Highway Traffic Safety Administration (NHTSA) pursuant to the National Traffic and Motor Vehicle Safety Act of 1966 (the Act),[2] and is challenged here for the first time.

Congressional concern over the rising highway accident rate, the loss of lives and property incidental thereto, and the tendency of automobile manufacturers to concentrate on cosmetic design to the detriment of safety design, prompted passage of the Act. Congress voiced its belief that "the restrained and responsible exercise of Federal authority can channel the creative energies and vast technology of the automobile industry into a vigorous and competitive effort to improve the safety of vehicles." S. Rep. No. 1301, 89th Cong., 2d Sess. 1, *reprinted in* [1966] U.S. Code Cong. & Admin. News pp. 2709, 2709 [*sic*].

---

[1] 49 C.F.R. § 571.121. The part of the Standard that regulates air-braked buses is not an issue here.

[2] 15 U.S.C. § 1381-1431.

To this end the Secretary of the Department of Transportation (Secretary) was given authority to regulate motor vehicle safety by the promulgation of appropriate minimum performance standards. 15 U.S.C. § 1392. The purpose of the Act is to "reduce traffic accidents and deaths and injuries to persons resulting from traffic accidents." 15 U.S.C. § 1381. "[S]afety shall be the overriding consideration in the issuance of standards . . . ."[3] Each standard must meet the need for motor vehicle safety[4] and must be stated in objective terms. 15 U.S.C. § 1392(a). The Secretary is instructed to consider "available motor vehicle safety data, including the results of research, development, testing and evaluation activities conducted pursuant to this chapter." 15 U.S.C. § 1392 (f)(1). A separate section requires the Secretary to carry out research and development, which can be done by grants to "States, interstate agencies, and nonprofit institutions." 15 U.S.C. § 1395(a), (b). The Secretary is required to consider whether a

---

[3] S.Rep. No. 1301, 89th Cong., 2d Sess. 6, *reprinted in* [1966] U.S. Code Cong. & Admin. News pp. 2709, 2714.

[4] "Motor vehicle safety" is defined in the Act as:

> the performance of motor vehicles or motor vehicle equipment in such a manner that the public is protected against unreasonable risk of accidents occurring as a result of the design, construction or performance of motor vehicles and is also protected against unreasonable risk of death or injury to persons in the event accidents do occur . . . .

15 U.S.C. § 1391(1).

standard is "reasonable, practicable [5] and appropriate for the particular type of motor vehicle" and "will contribute to carrying out the purposes of this chapter." 15 U.S.C. § 1392(f). He has authority to amend standards and to delay their effective date when the need arises.[6] The rulemaking power of the Secretary may be delegated to NHTSA. 49 C.F.R. § 501.2.

Each manufacturer [7] of affected vehicles must certify that vehicles produced after the effective date of a standard conform to that standard. An exception is made for "incomplete vehicle manufacturers," who may refuse to certify or provide a qualified certification.[8] With that qualification, failure to certify, or

[5] "Practicable" is defined to "require consideration of all relevant factors, including technological ability to achieve the goal of a particular standard as well as consideration of economic factors." H.R. Rep. No. 1776, 89th Cong., 2d Sess. 16 (1966).

[6] Congress foresaw that such postponements might be necessary "because it may be a practical economic and engineering impossibility, as well as a source of great hardship and unnecessary additional cost, to require that all vehicle changes required by any new safety standard . . . be accomplished . . . within 1 year." S. Rep. No. 1301, *supra* note 3, at 7, *reprinted in* [1966] U.S. Code Cong. & Admin. News pp. 2709, 2714.

[7] " 'Manufacturer' means any person engaged in the manufacturing or assembling of motor vehicles or motor vehicle equipment, including any person importing motor vehicles or motor vehicle equipment for resale." 15 U.S.C. § 1391(5).

[8] 49 C.F.R. § 568.4(a)(7)(iii). An incomplete manufacturer that builds a chassis-cab, which is thereafter turned into a specialized truck by a "final stage manufacturer," must certify that the completed vehicle will conform to the standard if specified instructions are followed. *See* text accompanying note 58 *infra*.

false certification, is punishable by civil fines in amounts up to $800,000.[9] Moreover, any vehicle which is sold to a distributor or dealer, and thereafter found to be nonconforming, must be recalled by the manufacturer, at his expense, or brought into conformity where located. The manufacturer must pay the distributor or dealer "a reasonable reimbursement" at a rate that is fixed by the statute. 15 U.S.C. § 1400(a).

Once NHTSA has indicated that a standard is final, any person "adversely affected" may petition the United States Court of Appeals for review. 15 U.S.C. § 1394. The House Report [10] states that judicial review under the Act is based on the compliance provisions of the Food and Drug Act, 21 U.S.C. § 371(f)(3), which contains a substantial evidence requirement.[11] The Act itself provides that the Administrative Procedure Act "shall apply to all orders establishing . . . a Federal motor vehicle safety standard," 15 U.S.C. § 1392(b), and the Administrative Procedure Act allows agency action to be held unlawful if "arbitrary, capricious, an abuse of discre-

[9] 15 U.S.C. §§ 1397(a)(1)(C), 1398. When a vehicle is certified falsely, the provisions of these sections apply only if the person certifying "in the exercise of due care has reason to know that such certificate is false or misleading in a material respect." 15 U.S.C. § 1397(a)(i)(C).

[10] H.R. Rep. No. 1776, *supra* note 5, at 16.

[11] *See also* S. Rep. No. 1301, *supra* note 3, at 8, *reprinted in* [1966] U.S. Code Cong. & Admin. News pp. 2709, 2715-16.

tion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

Whether there is a distinction between the tests of "substantial evidence" and "arbitrary and capricious" is the subject of vigorous debate,[12] but we see no pressing need to resolve that question here. The Secretary is required to file with the Court the evidence on which the standard was based. 15 U.S.C. § 1394 (a)(1). The factual basis of the Standard is subject to a "thorough, probing, in-depth review" and we are "required to decide whether the Secretary acted within the scope of his authority." *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, 401 U.S. 402, 415, 91 S.Ct. 814, 823, 28 L.Ed.2d 136 (1971). "Although this inquiry into the facts is to be searching and careful, the ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency." *Id.* at 416, 91 S.Ct. at 824.

HISTORY OF THE STANDARD

In October, 1967, the predecessor of NHTSA announced its intention to promulgate a standard for air-braked trucks, tractor-trailers, and buses. 32 Fed. Reg. 14,278 (1967). A notice of proposed rulemaking was published in January, 1969, 34 Fed. Reg. 1055 (1969), and the proposed standard for trucks and buses was released on June 25, 1970, with a proposed effective date of January 1, 1972, 35 Fed.

[12] *See* K. Davis, Administrative Law of the Seventies §§ 29.00 to .01-5 (1976).

Reg. 10,368 (1970).[13] The proposed standard required vehicles to stop within certain distances, from certain speeds, without leaving a 12-foot wide lane, and without lockup of any wheel "more than momentarily." It set forth brake actuation and release times, specified a relationship between brake chamber air pressure and brake retardation force (to be determined by placing each brake on an inertia dynamometer), provided for repetitious testing to assure brake recovery, and required a number of back-up systems for both system brakes and parking brakes. The initial stopping distance requirement from 60 mph was 217 feet on a dry (skid number 75)[14] surface.

The Standard was amended on numerous occasions, first, by increasing from 217 feet to 245 feet the distance in which a vehicle travelling at 60 mph was required to stop. This first increase was allowed "to more accurately reflect the friction characteristics of a surface with a skid number of 75 . . . ." [15] The effective date of the Standard was extended until January 1, 1973.

[13] The first proposal regulating air brakes on trailers was published at 35 Fed. Reg. 10,456 (1970) with the same proposed effective date of January 1, 1972.

[14] The "skid number" roughly measures the friction between the tire and the pavement: the "stickier" the pavement the higher the skid number.

[15] 36 Fed. Reg. 3817 (1971). *See also* 37 Fed. Reg. 12,496 (1972).

In February, 1972, in response to petitions from manufacturers requesting reconsideration, the effective date was advanced to September 1, 1974, to "permit a longer period of fleet testing to evaluate the durability of the new systems . . ." 37 Fed. Reg. 3907 (1972). NHTSA noted that "a number of petitions requested increases in the stopping distance required by S5.3.1. The distances specified are considered reasonable and well within the state of the art. Greater distances would increase the disparity between trucks and cars and be contrary to the interests of safety." *Id.* These petitions were denied, without recitation as to the process by which the agency reached its determination.

The stopping distances prescribed by NHTSA were far shorter than the former stopping distances achieved by large trucks. Therefore, a completely new braking system was necessary[16] and, since the Standard also demanded that stops be made without lock-up of wheels (more than "momentarily"), most manufacturers notified NHTSA that an "antilock"

[16] As described by Rockwell: "Front axles require redesign to carry the added combined load. The lower rated axles require redesign in all components, the higher rated ones require minimum redesign. All of the mountings for the brakes must be strengthened." Letter from Rockwell to NHTSA (Oct. 12, 1971) (Doc. No. 70-16-PRC-036). *See also* Letter from Ford Motor Co. to NHTSA (Jan. 14, 1974) (Doc. No. 121-PRM-000031); Letter from General Motors Corp. to NHTSA (Nov. 28, 1973) (Doc. No. 70-17-No4-001).

device was required.[17] This device consists of a minicomputer attached to each axle of the truck or tractor-trailer which "senses" when a wheel begins to lock and momentarily releases the brake to regain traction. The agency indicated that the Standard did not "require" such a device but set forth criteria for it if used, 36 Fed. Reg. 3817 (1971), and noted its faith in the device's reliability.[18]

In May, 1974, NHTSA again extended the stopping distance, this time allowing 258 feet for a stop from 60 mph. The reason given was the necessity to account for "production variations." [19] In addition,

[17] Manufacturers have indicated that, to meet this requirement, they will supply substantial braking torque on front axles and will prevent uncontrolled wheel lock-up in most cases by use of newly-developed antilock control systems. Most requests to modify the standard are prompted by uncertainty as to the availability and reliability of the necessary components involved in these changes.

39 Fed. Reg. 7966 (1974).

[18] The NHTSA has found that antilock systems are reliable and offer significant improvement in vehicle braking characteristics.

. . .

The systems permit fast, stable deceleration in emergency situations. A driver will not rely on this type of deceleration for routine maneuvers because of the discomfort to him and danger of load shifts associated with panic stops.

39 Fed. Reg. 7967 (1974).

[19] Most manufacturers argued that the 5 percent longer distances would be required for the indefinite future, because production variations would continue to affect performance significantly. The NHTSA established the

the effective date of the Standard was delayed until March 1, 1975, for trucks and buses, and until September, 1975, for trailers. 39 Fed. Reg. 20,350 (1974).

In early 1974, the agency began to receive continual complaints to the effect that antilock devices were unreliable, and rendered vehicles dangerously unsafe when combined with new, more effective brakes.[20] In 1974, NHTSA replied that the Standard was practicable as written, since its own investigation of the major antilock manufacturers indicated "millions of axle miles of antilock operation with a malfunction rate comparable to other equipment presently in highway service, and no highway accidents attributable to the device." The agency announced that the Standard was "final" for purposes of review. 39 Fed. Reg. 39,881 (1974).

> stopping distances on the basis of the ability of available equipment, and expects that experience in the production of these components will lead to predictable quality and the assurance that a vehicle, will in fact perform as well as it is designed to.

39 Fed. Reg. 17,553 (1974).

[20] "[W]e believe that a most serious safety problem may be created by present state-of-the-art brake systems designed to meet MVSS-121. This is due to the possibility of complete loss of vehicle control resulting from a failure of the wheel lock control system." Letter from General Motors Corp., *supra* note 16; *see* 39 Fed. Reg. 17,550 (1974); Letter from Ford Motor Co. to NHTSA (Apr. 1, 1974) (Doc. No. 74-10-No1-023).

But "finality" did not mean an end to amendments, nor to industry protestations.[21] NHTSA acknowledged that production variables were affecting performance,[22] and moved to amend the Standard to increase

---

[21] *See* 41 Fed. Reg. 8783 (1976); 41 Fed. Reg. 198 (1976); 40 Fed. Reg. 38,160 (1975); 40 Fed. Reg. 21,031 (1975); 40 Fed. Reg. 12,797 (1975); 40 Fed. Reg. 8953 (1975). ATA wrote the agency:

> Our fears arise from ample evidence (1) that the new vehicles built in accord with the Standard will be difficult to maintain, (2) that they will be uncontrollable where the antilock features of the front axle do not function as they are supposed to, and (3) that it is now shown that the unproved devices mandated by the rule are failing . . . .

Letter from ATA to NHTSA (Mar. 25, 1975) (Doc. No. 74-10-No15-004).

[22] General Motors . . . indicated that similar 121 vehicles can register as much as a 20-percent difference in stopping distances as a result of uncontrolled variability in brake component performance. International Harvester, which until recently had supported 5-percent longer stopping distances on an interim basis, now points to certain variables, including brake linings, in requesting long distances on a permanent basis. Diamond Reo reported the same experience . . . .

40 Fed Reg. 12,797 (1975).

> Petitions to reduce Standard No. 121's stopping distance requirements were received from six manufacturers and users of air-braked trucks and from Wagner Electric Corporation . . . . The manufacturers of components and vehicles argue essentially that production and test procedure factors introduce sufficient variability into the performance of their products that large "compliance margins" of overdesign must be built into each unit to assure 100 percent compliance with the standard's requirements. These petitions assert that, as a result, ve-

the stopping distance to 277 feet at 60 mph. 40 Fed. Reg. 38,160 (1975). This amendment was calculated to allow manufacturers to "depower" the front axles, relieving the danger of lockup in the event of antilock failure. The agency conceded that the requirements of the original Standard were difficult to achieve in a mass production situation.[23] In a con-

---

hicle designs have reached the maximum limits of brake technology and the brake systems can produce significant lateral instability and related poor handling characteristics. The petitions of users . . . argue that antilock systems, used by most manufacturers to meet the standard, are unreliable and constitute a safety hazard on the steering axle in combination with strong front wheel brakes.

40 Fed. Reg. 24,915 (1975).

[23] [T]his agency has evaluated the submitted data which show variability of various components and concludes that the degree of variability can necessitate more aggressive brake packages than are desirable to achieve the stopping distances contemplated in development of the standard. One undesirable characteristic cited by PACCAR is the side-to-side handling problems which can arise during severe braking associated with any imbalance of the brakes. Ford data demonstrate the point at which tire aligning torque becomes negative and contributes to steering instability under severe braking. Other manufacturers conclude that the variability in brake assembly and other areas forces use of brake packages which approach the maximum in technological feasibility and leaves no room for a "compliance margin." In agreement that these problems can arise in some cases, NHTSA proposes an increase in the stopping distance permissible in a stop from 60 mph in the loaded condition on a test surface with a skid number of 75 (with corresponding changes at lower speeds).

40 Fed. Reg. 24,916 (1975).

tinuing attempt to find a reasonable stopping distance within the technological reach of a mass production industry, the agency announced that a public meeting was necessary to explore the complaints about the safety of the antilock systems, and to "fully consolidate and evaluate such data." [24] This was not the first public meeting called by NHTSA, but it was the first to concentrate on the antilock system, the stopping distance requirements, and the dangers. In October, 1975, nine months after the Standard went into effect for trucks and buses, a public hearing was held in Washington, D. C., with members of the industry and public invited to attend to comment "on the record." [25] As a result, NHTSA proposed and effected a one-year suspension of the Standard for buses, be-

---

[24] The NHTSA has received reports that the new-introduced (*sic*) braking systems and antilock systems of some manufacturers, have not been operating properly, causing increased maintenance and the possibility of unsafe vehicle braking performance. Eight safety-related defects in the production systems have been reported to the NHTSA, and recall campaigns are underway at this time.

* * * *

To ensure that the data upon which the NHTSA relies are complete, the agency considers it imperative to collect all existing information on the operation of the new systems as soon as possible. For these reasons the NHTSA has determined that . . . a public meeting is desirable to discuss the field experience accumulated with the new vehicles.

40 Fed. Reg. 43,050 (1975).

[25] Unlike most prior public meetings, the October meeting was recorded and transcribed.

cause of "a pattern of erratic behavior of bus antilock equipment." 40 Fed. Reg. 52,856 (1975).

The agency also found that "some vehicles produced to comply with the standard demonstrate unsatisfactory handling characteristics. The source of the problem is not technological unfeasibility of producing vehicles with desirable handling characteristics, as demonstrated by many of the 121-equipped vehicles produced since March 1, 1975." 41 Fed. Reg. 8786 (1976). NHTSA found that large compliance margins and component variability were the cause of the manifest problems. While indicating that it could require redesign to solve these problems, NHTSA chose instead to extend the stopping distances once more, allowing a vehicle travelling 60 mph to stop within 293 feet. *Id.* Additional extensive changes of the Standard as it affects trucks and tractor-trailers, 40 Fed. Reg. 56,920 (1975), were proposed. At the time of oral argument in our court, three amendments were still pending. 41 Fed. Reg. 29,696 (1976). The effective date of the Standard as it applies to buses was postponed until January, 1977, because of severe antilock problems. 40 Fed. Reg. 52,856 (1975).

THE MERITS

Paccar and ATA have concentrated their attack on the Standard's stopping distance criteria, *i.e.*, the antilock requirement.[26] All petitioners argue that the

[26] Although NHTSA denies that antilock is required by the Standard, extensive testimony and evidence from the industry,

testing procedures promulgated by NHTSA are "non-objective" and TEBDA individually objects to the certification requirements of the Standard.

Paccar and ATA vigorously assert that the Standard does not meet the statutory requirement of "practicability" because no need has been demonstrated for this air brake system, the cost of the system is high,[27] and its requirements are beyond the reach of current technology. They argue that it is not a "reasonable" standard, since the failure of what they consider an unreliable device, the antilock, in a panic braking situation creates a potentially more danger-

unrebutted agency evidence, convinces us, as a practical matter and beyond doubt, that antilock was necessary to meet the Standard. *See, e.g.*, 39 Fed. Reg. 7966 (1974); Letter from Ford Motor Co., *supra* note 16; Letter from General Motors Corp., *supra* note 16; Letter from International Harvester Co. to NHTSA (Mar. 26, 1971) (Doc. No. 70-16-PRC-001); Letter from Wagner Electric Corp. to NHTSA (Apr. 10, 1975) (Doc. No. 74-10-No15-010); Testimony of Consolidated Freightways, Inc. at TR-15 (Oct. 1975) (Doc. No. 75-16-No2-042).

[27] At the public hearings truck manufacturers testified that the following costs are attributable to the Standard: Ford Motor Co., $23 million, Testimony at TR-351 (Oct. 1975) (Doc. No. 75-16-No2-042); General Motors Corp., $15 million, Testimony at TR-360; Kelsey-Hayes, $25 million, Testimony at TR-388. The antilock system adds $1200 to $1500 to the cost of each truck. Testimony of National Ass'n of Motor Bus Owners at TR-63; Testimony of Greyhound Lines, Inc. at TR-70, 88; Testimony of Transport of New Jersey at TR-128; Testimony of Leaseway Transp. Corp. at TR-228. The President's Council on Wage and Price Stability estimated that the Standard would cost as much as $400 million per year in capital costs alone. Testimony at TR-306-07.

ous situation than a "prestandard" vehicle because of the new, stronger braking system.

In charging that no "need" has been demonstrated for this Standard, Paccar and ATA ignore the extensive record compiled by the agency. Congress was aware that "it is virtually impossible to obtain specific information and data concerning the causes of traffic accidents . . . ." H.R. Rep. No. 1776, *supra* note 5, at 11. To combat this uncertainty, the Secretary was empowered to implement standards and conduct research. Two studies commissioned by NHTSA found that improving truck and tractor-trailer stability, by preventing jackknifing and wheel lockup, would substantially increase the safety of these massive vehicles on the highway.[28] Several studies cited in the administrative record indicate that greater braking capability would improve highway safety.[29] In addition, the evidence produced by NHTSA supports the proposition that in down-hill accidents, trucks (undifferentiated from tractor-trailers) are the striking vehicle far more frequently than their numbers on

---

[28] R. Murphy, R. Limpert & L. Segal, Highway Safety Research Institute of the University of Michigan, Bus, Truck, Tractor-Trailer Braking System Performance (Mar. 1971) [hereinafter cited as Murphy Report]; National Transportation Safety Board, Special Study—Commercial Vehicle Braking (Nov. 1972).

[29] Federal Highway Administration, U.S. Dep't of Transportation, Emergency Application Systems for Power Brake Mechanisms on Highway Trailer Combinations (Aug. 1970); Murphy Report, *supra* note 28.

the road would dictate.[30] There is evidence that the size and weight of these vehicles can produce disastrous results to occupants of automobiles when an accident occurs [31] and that the jackknifing of tractor-trailers can produce "chain-reaction" accidents.[32] While there is no direct evidence that shorter braking distances would prevent a particular number of accidents, the conclusion from one study was that trucks travelling at an "unreasonable speed for conditions, not necessarily above the posted speed limit" were involved in nearly 43% of the accidents investigated.[33] Common sense would seem to indicate that when two types of vehicles of widely divergent size share the same roadway, and the larger, heavier vehicle has a much longer stopping distance, any situation which requires emergency braking is potentially disastrous to the smaller automobile and its passengers.

It has been asserted that improved brake maintenance would eliminate accidents attributable to brak-

---

[30] Scott & O'Day, Statistical Analysis of Truck Accident involvements (1971) (Contract HS-800-627); Baker, Wong & Masemore, Fatal Tractor-Trailer Crashes: Considerations in Setting Relevant Standards (July 14, 1975) (Doc. No. 75-16-No1-067).

[31] NHTSA, Update of Information on Heavy Truck Accidents (Dec. 8, 1975) (Doc. No. 75-16-No5-056); Scott & O'Day, *supra* note 30; R. Wolf, Cornell Aeronautical Laboratory, Truck Accidents and Traffic Safety—An Overview (1968).

[32] Baker, Wong & Masemore, *supra* note 30.

[33] Bureau of Motor Carrier Safety, U.S. Dep't of Transportation, Summary of Accident Investigations (1969). *See also* Baker, Wong & Masemore, *supra* note 30.

ing systems without the need to install new brake mechanisms. While there is some evidence that better brake maintenance would solve a number of problems,[34] we are satisfied, from our review of the data, that NHTSA was justified in promulgating a Standard requiring improved air brake systems and stability mechanisms for the industry.

The goals of the Standard, decreasing the disparity of stopping distances between ordinary automobiles and heavier vehicles, 37 Fed. Reg. 3905 (1972), and maintaining vehicle stability and directional control, 41 Fed. Reg. 8784 (1976), are both reasonable and practicable. However, after a careful review of the extensive record in this case, we have come to the conclusion that because of unforeseen problems in the development of the new braking systems, the Standard was neither reasonable nor practicable at the time it was put into effect.

The House Report stated: "Standards, of course, cannot be set in a vacuum. They must be based on reliable information and research." H.R. Rep. No. 1776, *supra* note 5, at 11. To this end, the agency was commanded to conduct such research itself, or to secure the results of research by contracts with "States, interstate agencies, and nonprofit institutions." 15 U.S.C. § 1395(a), (b). We are not persuaded that the Standard, *as finally issued*, was based

[34] *Brakes, Fleet Owner*, Feb. 1963, at title page; R. Wolf, *supra* note 31; Testimony of Captain E. Kynaston, California Highway Patrol, at TR-485 (Oct. 1975) (Doc. No. 75-16-No2-042).

on the quality of "reliable information and research" that the Act required as a prerequisite.

NHTSA originally proposed a standard that it considered well within the "state of the art." Antilock devices had been used on some cars and aircraft.[35] Some trucks were easily able to meet the stopping requirements of the Standard. 41 Fed. Reg. 8785 (1976). But the critical problems began with mass production of vehicles designed to meet the Standard.

The Standard required redesigning the entire braking systems of many trucks and tractor-trailers by increasing front brake torque and strengthening the brake design to enable the vehicles to meet the stopping distance requirements. 39 Fed. Reg. 7969 (1974). One manufacturer informed NHTSA that it was required to introduce 40,000 new part numbers in its system alone as the result of the Standard.[36] As new components—strong front axles, new brake linings, and mini-computers to control wheel lock and skid—were mass-produced, and subsequently put together in a unique combination, grave problems developed. There were complaints about electrical problems, relay valve failures, false warning signals, and

[35] 30 Fed. Reg. 17,552 (1974); NHTSA, A Procedure for Evaluating Vehicle Braking Performance (1971) (Contract HS-31-051); Testimony of G. Eads, Council on Wage and Price Stability, at TR-318 (Oct. 1975) (Doc. No. 75-16-No2-042).

[36] Letter from International Harvester Co. to NHTSA (1975) (Doc. 75-16-No2-005).

failures of the warning signal [37] required by NHTSA when antilock is used.[38] The agency was soon informed of a number of situations in which the warning light did not flash when the system was inoperable [39] and of other cases in which the warning light flashed continuously. The driver or fleet manager sometimes "solved" the latter problem simply by disconnecting the signal.[40] And we are informed that Greyhound Lines, anticipating the inevitable danger to its passengers from activating the antilock, simply disconnected the device when its newly equipped vehicles were delivered. Radio frequency interference (also called magnetic frequency interference) was an unanticipated problem,[41] causing the antilock to

[37] NHTSA, Listing of Safety Defect Recall Campaigns (1975) (Doc. No. 75-16-No2-010); Letter from ATA to NHTSA (Mar. 29, 1974) (Doc. No. 74-10-No1-014); Letter from NHTSA to Weyerhauser Co. (Mar. 8, 1976) (Doc. No. 75-16-No5-067); Testimony of Holly Farms Poultry Indus. at TR-176-78 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of Wesco Truck & Trailer Sales at TR-518-19.

[38] 41 Fed. Reg. 8786 (1976); 30 Fed. Reg. 7967 (1974).

[39] NHTSA, Listing of Safety Defect Recall Campaigns, *supra* note 37; Letter from Hy-Vee Food Stores to NHTSA (Mar. 1976) (Doc. No. 75-16-No2-173); Testimony of Leaseway Transp. Corp. at TR-231-33 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of Roadway Express at TR-269; Testimony of Freightliner Corp. at TR-296.

[40] Petition for Reconsideration, International Harvester Co. (Mar. 22, 1972) (Doc. No. N3 70-16-1).

[41] 41 Fed. Reg. 8787 (1976); 40 Fed. Reg. 59,228 (1975); Testimony of Rockwell Int'l Corp. at TR-150 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of General Motors Corp. at TR-361.

malfunction and the brakes to fail without warning.[42] This problem was still being encountered a year after the Standard had been made effective. When the antilock system failed, the high torque front brakes, in the opinion of the industry, created a serious safety problem.[43] Among the problems encountered were lateral instability, jackknifing, wheel lockup, and "pulling" to one side.[44]

Although the Act requires manufacturers to report all safety-related defects to NHTSA, 15 U.S.C. § 1411, manufacturers informed the agency that truck users did not always advise them of the problems. Consoli-

[42] NHTSA, Memo of Visit to International Harvester Co. (Mar. 12, 1976) (Doc. No. 75-16-No26-002); Report from Kelsey-Hayes Co. to NHTSA (Jan. 31, 1975) (Doc. No. 75E-031); Letter from NHTSA to Weyerhauser Co., *supra* note 37; Testimony of Freightliner Corp. at TR-296 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of General Motors Corp. at TR-361; Testimony of Kelsey-Hayes Co. at TR-391; Testimony of California Highway Patrol at TR-466. Citizens Band radio transmission is not a problem. Letter from NHTSA to Weyerhauser Co., *supra* note 37; Letter from NHTSA to Congressman Shuster (Sept. 17, 1975) (Doc. No. 75-16-No2-032).

[43] Letter from ATA to NHTSA (Mar. 25, 1975) (Doc. No. 74-10-No5-065); Letter from Ford Motor Co., *supra* note 16; Letter from General Motors Corp. to NHTSA (Apr. 1, 1974) (Doc. No. 74-10-No1-26); Letter from General Motors Corp., *supra* note 16; Testimony of Wilson Freight Co. at TR-211 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of Leaseway Transp. Corp. at TR-234; Testimony of Queens Transit Corp. and Steinway Transit Corp. at TR-510.

[44] NHTSA, Internal Progress Reports B-7 (1976) (Doc. No. 75-16-No2-183).

dated Freightway representatives testified that a spot check of their Standard 121-equipped trailers disclosed that 65% of the antilock devices malfunctioned.[45] General Motors reported that, despite instructions to their users to report defects, a spot check by the company revealed a 59% nonoperative rate for the antilock system.[46] In March, 1976, another survey, also by Consolidated Freightway at the request of the Subcommittee on Consumer Protection and Finance of the House Interstate and Foreign Commerce Committee, discovered that 48% of the trailers had malfunctioning antilocks.[47] The absolute number of vehicles represented by these figures is quite small. But in view of the testimony to NHTSA that drivers were disconnecting warning lights, that large numbers of antilock systems certified at the factory were malfunctioning upon delivery or within a short time after delivery,[48] and that malfunctions created a hazard, we think that the agency had a responsibility to examine the results of its rulemaking

[45] Testimony at TR-17-24 (Oct. 1975) (Doc. No. 75-16-No2-042).

[46] Letter from General Motors Corp. (Apr. 1, 1974), *supra* note 43.

[47] Letter from Consolidated Freightways, Inc. to the Secretary (Apr. 6, 1976) (NHTSA Reliability File No. 20).

[48] Letter from A-P-A Transport Corp. to NHTSA (Feb. 5, 1976) (Doc. No. 75-16-No2-010); Letter from J. P. Silvey Trucking to NHTSA (Oct. 7, 1975) (Doc. No. 75-16-No2-052); Testimony of Leaseway Transp. Corp. at TR-230 (Oct. 1975) (Doc. No. 75-16-No2-042); Testimony of Roadway Express at TR-276.

by investigating more fully the safety of vehicles *in use*.

Although NHTSA received requests to postpone the March, 1975, effective date, no further delay in the truck and tractor standard was allowed by the agency.[49] While we can understand the agency's reluctance again to delay the effective date, after having postponed it several times previously,[50] we agree with the Sixth Circuit that NHTSA has the responsibility to assure that the new systems it requires are reliable when placed in use. *Chrysler Corp.* v. *Department of Transp.*, 472 F.2d 659 (6th Cir. 1972). If, to accomplish that end, the industry demonstrates that it must be given more time to solve its start-up problems, the agency must revise its timetables. As the court stated in *Chrysler Corp.*:

> [S]hould it develop that, as the time for implementation of federally mandated devices approaches, such devices will require further testing or development, upon a showing to the Agency by the manufacturers or the developers the Agency should again review the matter and decide whether to extend the time for implementation or to alter, or even to abandon, the project.

Id. at 673.

[49] 40 Fed. Reg. 1248 (1975); 39 Fed. Reg. 40,168 (1974); 39 Fed. Reg. 39,880 (1974).

[50] 40 Fed. Reg. 1246 (1975); 39 Fed. Reg. 28,161 (1974); 30 Fed. Reg. 20,380 (1974); 39 Fed. Reg. 17,550 (1974); 37 Fed. Reg. 3905 (1972).

The Act requires that standards set by the agency protect the public against unreasonable risk of accidents "occurring as a result of the design, construction *or performance* of motor vehicles." 15 U.S.C. § 1391(1) (emphasis added). NHTSA has the power to determine whether performance conforms to theory through its mandate to research or contract for research, to do compliance testing, and to "conduct any inspection or investigation . . . which may be necessary to enforce" federal vehicle safety standards. 15 U.S.C. § 1401(a)(1). Yet, despite massive evidence presented to NHTSA that many vehicles equipped with antilocks were potentially more dangerous in performance than pre-Standard vehicles, the agency admitted during oral argument in July, 1976, that it had done no compliance testing since the Standard went into effect over a year earlier. Agency attorneys also admitted that prior to the effective date of the Standard, NHTSA had done no reliability testing of vehicles with Standard-121 components whatsoever, other than the testing reviewed in the Murphy Report,[51] which did not include stops at the higher speeds. For "proof" of the reliability of the system, the agency has relied only upon the testimony of some manufacturers,[52] the lack of reports of highway accidents "caused" by antilock,[53] and the results of test-

[51] Murphy Report, *supra* note 28.

[52] 41 Fed. Reg. 8785 (1976); 40 Fed. Reg. 5822 (1975); 39 Fed. Reg. 39,880 (1974); 39 Fed. Reg. 17,552 (1974).

[53] 39 Fed. Reg. 39,880 (1974).

ing a mere three 121-equipped tractor-trailers from June until September, 1975. But because antilock problems have appeared with usage rather than at the manufacturing stage, the foregoing methods employed by NHTSA to examine the validity of complaints were inadequate.[54] The agency has a heavy responsibility indeed, a responsibility to ascertain, with all reasonable probability, that its regulations do not produce a more dangerous highway environment than that which existed prior to governmental intervention. In view of substantial evidence received by NHTSA that the "in-use" performance of vehicles equipped with antilock was not consistent with the performance required by the Standard, and in some circumstances may have been more hazardous than the performance of pre-Standard vehicles, the agency's failure to conduct more intensive testing of trucks and tractor-trailers certified under the Standard was not only unreasonable, but, also, a legal abuse of its discretion.

There is much in the Standard that has long been needed for highway safety, and it is undisputed that the antilock device, when perfected, will advance that goal. We are also aware that some manufacturers have expended a great deal of time, energy, and money over the last six years, in attempting to pro-

[54] The agency's evidence does not even show whether the above-mentioned antilock defects occur only in certain models of the device or only when placed on a vehicle of a certain type or weight. This is one of the many gaps in NHTSA's proof that it must undertake to fill.

duce vehicles to comply, and that they have, to a large degree, been successful. However, the comprehensive data before us indicate that there is a strong probability that the performance of a substantial number of vehicles whose braking systems have been altered to include "overpowered" front axles and antilock devices has created a potentially more hazardous highway situation than existed before the Standard became operative. Therefore, until such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid. The agency may, of course, continue to propose new standards, including the promulgation of new stopping distance requirements to replace those here invalidated. We hold only that more provative and convincing data evidencing the reliability and safety of vehicles that are equipped with antilock and in use must be available before the agency can enforce a standard requiring its installation.

TESTING REQUIREMENTS

To ensure compliance with the Standard, NHTSA has retained the right to test certified 121 vehicles on testing tracts with road surface skid numbers of 75 and 30. *See* 49 C.F.R. § 571.121. The skid number

represents the coefficient of friction between the tire and the road surface. It is a quantitative measure of the slickness of the road: skid number 75 represents a dry road, skid number 30 a wet road. Manufacturers whose vehicles fail NHTSA's tests and who cannot establish that their own testing procedures reflected due care are subject to administrative penalties. Furthermore, nonconforming vehicles are subject to the recall and repair provisions of 15 U.S.C. § 1400(a). Petitioners raise several objections to NHTSA's testing procedures.

Petitioners argue that the skid numbers of 75 and 30 are ill-chosen. We agree. The skid numbers are based on a mathematical calculation that assumes the use of a particular tire. It is uncontroverted that the particular tire is no longer produced and that the use of available tires produces different results.[55] It is also uncontroverted that there was a mathematical error in the original formula for determining the skid numbers.[56]

Petitioners also raise a more basic objection to the skid number method of testing stopping distances. They assert that the method is neither "objective" nor "practicable," as required by 15 U.S.C. § 1392(a), because the skid number of a given surface varies over time and with use.[57]

---

[55] NHTSA, Braking Systems (Apr. 1975) (Doc. No. 75-27-GR-001).

[56] *Id.*

[57] Letter from Mack Truck to NHTSA (July 1975) (Doc. No. 75-16-No1-023).

We cannot agree that the test is not "objective." The fact that it is difficult to create and thereafter maintain a road surface with a particular coefficient of friction does not render the specified coefficient any less objective. The Sixth Circuit, in examining an attack on the same testing regulations, defined an objective standard as one whose testing procedures are "capable of producing identical results when test conditions are exactly duplicated, that they be decisively demonstrable by performing a rational test procedure, and that compliance is based upon readings obtained from measuring instruments as opposed to the subjective opinions of human beings." *Chrysler Corp.* v. *Department of Transp.*, 472 F.2d 659, 676 (6th Cir. 1972) (footnote omitted). The skid number method of testing braking capacity meets this definition. Identical results will ensue when test conditions are exactly duplicated. The procedure is rational and decisively demonstrable. Compliance is based on objective measures of stopping distances rather than on the subjective opinions of human beings.

We do agree with petitioners, however, that NHTSA's testing procedure is not "practicable." The fluctuations in skid numbers on a given road surface make it impracticable for manufacturers to conduct tests that will assure that their vehicles will exactly meet the objective standard when tested by NHTSA. Their only recourse will be, not simply to comply with the stated standard, but to overcompensate by testing

their vehicles on road surfaces substantially slicker than official regulations require.

NHTSA responds that it has met this objection by testing compliance on a road surface substantially more sticky (skid number 85) than required by the Standard (skid number 75), thus allowing a margin sufficient to compensate for any variance in the skid number road surfaces used by manufacturers. These informal assurances are not enough. Manufacturers are entitled to testing criteria that they can rely upon with certainty.

In the same vein, petitioners complain that NHTSA has not specified the time intervals between tests, the duration of permissible wheel lockup during tests, and the amount of curving in testing track roadways. Again NHTSA responds with informal assurances that it will act reasonably in performing its tests. In these respects also the manufacturers are entitled to formal and reasonably specific testing criteria.

Petitioners' argument that NHTSA should promulgate a regulation formalizing its informal agreement to test vehicles with a load that is within the "center of gravity envelope" of the vehicle [58] has been mooted during the pendency of these proceedings. In May of 1975 NHTSA promulgated just such a regulation. 40 Fed. Reg. 21,032 (1975).

TEBDA's challenge to the certification requirements of the Standard is also moot. TEBDA repre-

---

[58] Letter from NHTSA to Trailmobile Corp. (May 8, 1976) (Doc. No. 75-16-No7-007).

sents approximately half of the "intermediate" and "final stage" manufacturers in this country. The "first stage" or "incomplete" manufacturers build the truck chassis, and TEBDA members modify that chassis to produce dump trucks, cement trucks, garbage trucks, and other trucks. TEBDA complained that chassis-cab manufacturers were not required to certify their work and that, as a result, TEBDA members were forced to certify work over which they have had no control. During the pendency of these proceedings NHTSA modified its regulations to require chassis-cab manufacturers to certify that their vehicles will conform to the standard if completed in accordance with specified instructions. *See* 42 Fed. Reg. 37,814-18 (1977) (to be codified in 49 C.F.R. §§ 567, 568); 40 Fed. Reg. 45,847-49 (1975).

TEBDA also challenges as not "practicable" the road testing procedure set out at great length at 49 C.F.R. § 571.121. It is undisputed that it would be economically unfeasible for TEBDA members to road test each vehicle they complete.[59] TEBDA argues, however, that its manufacturers run the risk of violating the "due care" provision of 15 U.S.C. § 1397 (a)(1)(C) if they do not road test, since road testing is the only method NHTSA has specified whereby manufacturers can ensure that their vehicles are properly certified.

[59] There are only four test tracks in the United States, and the cost of testing each vehicle is between $2000 and $4000. Letter from NHTSA to the Honorable Warren G. Magnuson (May 1975).

NHTSA asserts that road testing is not required of the manufacturers, and it is only necessary that any truck manufactured meet the test that it performs. According to the agency, due care could be satisfied by any number of alternative methods, such as group testing, mathematical calculations, and so forth.[60] TEBDA contends that, since such alternatives are not contained in the regulations, its manufacturers have no assurance that these alternatives will ultimately be found to comply with the due care requirement.

In our opinion, the plain statutory mandate of "practicability" and "objectivity" is not met by agency "suggestions" of what might constitute compliance with the amorphous due care standard. Since NHTSA has admitted that road testing is beyond the practical and financial reach of the final stage manufacturers, it must propose some alternative method for those manufacturers which, if followed, it will recognize as fulfilling the due care requirement.

Our decision in no way invalidates the testing procedures, nor does it affect the requirement that each vehicle sold to a distributor or dealer must conform to a legally appropriate standard. 15 U.S.C. § 1400. We hold only that this regulation is neither "objective" nor "practicable" because it could subject intermediate and final stage manufacturers to the pen-

[60] Letter from NHTSA to TEBDA (Apr. 16, 1976); Letter from NHTSA to TEBDA (Mar. 6, 1975) (denial of Petition for Rehearing); NHTSA References.

alties of 15 U.S.C. § 1397 simply because they could not perform the only procedure specified in the regulations for fulfilling the due care provision. Statutes prescribing penalties, civil or criminal, must be drafted without ambiguity. Successive authorities of NHTSA might take an entirely different view than that announced by the incumbents, and subjecting the manufacturers to such a risk does not comport with due process requirements.

We have concluded that numerous other issues raised by petitioners are without merit.

The cause is remanded to the Respondent for further proceedings not inconsistent with the views herein expressed.

SO ORDERED.

APPENDIX B

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

Nos. 75-1017, 75-2831 and 75-3182

PACCAR, INC., PETITIONER,

v.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION, RESPONDENTS.

TRUCK EQUIPMENT & BODY DISTRIBUTORS ASSOCIATION, PETITIONER,

v.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, ET AL., RESPONDENTS.

AMERICAN TRUCKING ASSOCIATIONS, INC., PETITIONER,

v.

N.H.T.S.A., RESPONDENT.

JUDGMENT

Upon Petition to Review a Decision of the National Highway Traffic Safety Administration, Department of Transportation.

This Cause came on to be heard on the Transcript of the Record from The National Highway Traffic Safety Administration, Department of Transportation and was duly submitted.

On Consideration Whereof, it is now here ordered and adjudged by this Court, that the Decision of the said N.H.T.S.A. in this Cause be, and hereby is REMANDED for further proceedings.

Filed and entered April 17, 1978.

APPENDIX C

National Highway Traffic and Motor Vehicle Safety Act of 1966, 80 Stat. 718, as amended, 15 U.S.C. (1976 ed.) 1381 *et seq.*:

15 U.S.C. 1381:

Congress hereby declares that the purpose of this chapter is to reduce traffic accidents and deaths and injuries to persons resulting from traffic accidents. Therefore, Congress determines that it is necessary to establish motor vehicle safety standards for motor vehicles and equipment in interstate commerce; to undertake and support necessary safety research and development; and to expand the national driver register.

15 U.S.C. 1392:

(a) *Establishment*

The Secretary shall establish by order appropriate Federal Motor vehicle safety standards. Each such Federal motor vehicle safety standard shall be practicable, shall meet the need for motor vehicle safety, and shall be stated in objective terms.

(b) *Applicability of administrative procedure provisions*

Subchapter II of chapter 5, and chapter 7, of title 5 shall apply to all orders establishing, amending, or revoking a Federal motor vehicle safety standard under this subchapter.

(c) *Effective date of orders*

Each order establishing a Federal motor vehicle safety standard shall specify the date such

standard is to take effect which shall not be sooner than one hundred and eighty days or later than one year from the date such order is issued, unless the Secretary finds, for good cause shown, that an earlier or later effective date is in the public interest, and publishes his reasons for such finding.

* * * * *

(e) *Amendment and revocation of standards*

The Secretary may by order amend or revoke any Federal motor vehicle safety standard established under this section. Such order shall specify the date on which such amendment or revocation is to take effect which shall not be sooner than one hundred and eighty days or later than one year from the date the order is issued, unless the Secretary finds, for good cause shown, that an earlier or later effective date is in the public interest, and publishes his reasons for such finding.

(f) *Factors to be considered in prescribing standards*

In prescribing standards under this section, the Secretary shall—

(1) consider relevant available motor vehicle safety data, including the results of research, development, testing and evaluation activities conducted pursuant to this chapter;

(2) consult with the Vehicle Equipment Safety Commission and such other State or interstate agencies (including legislative committees) as he deems appropriate;

(3) consider whether any such proposed standard is reasonable, practicable and appropriate for the particular type of motor vehicle or item of motor vehicle equipment for which it is prescribed; and

(4) consider the extent to which such standards will contribute to carrying out the purposes of this chapter.

15 U.S.C. 1394:

(a) (1) In a case of actual controversy as to the validity of any order under section 1392 of this title, any person who will be adversely affected by such order when it is effective may at any time prior to the sixtieth day after such order is issued file a petition with the United States court of appeals for the circuit wherein such person resides or has his principal place of business, for a judicial review of such order. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary or other officer designated by him for that purpose. The Secretary thereupon shall file in the court the record of the proceedings on which the Secretary based his order, as provided in section 2112 of title 28.

(2) If the petitioner applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Secretary, the court may

order such additional evidence (and evidence in rebuttal thereof) to be taken before the Secretary, and to be adduced upon the hearing, in such manner and upon such terms and conditions as to the court may seem proper. The Secretary may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original order, with the return of such additional evidence.

(3) Upon the filing of the petition referred to in paragraph (1) of this subsection, the court shall have jurisdiction to review the order in accordance with chapter 7 of title 5 and to grant appropriate relief as provided in such section.

(4) The judgment of the court affirming or setting aside, in whole or in part, any such order of the Secretary shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28.

(5) Any action instituted under this subsection shall survive, notwithstanding any change in the person occupying the office of Secretary or any vacancy in such office.

(6) The remedies provided for in this subsection shall be in addition to and not in

substitution for any other remedies provided by law.

(b) A certified copy of the transcript of the record and proceedings under this section shall be furnished by the Secretary to any interested party at his request, and payment of the costs thereof, and shall be admissible in any criminal, exclusion of imports, or other proceeding arising under or in respect of this subchapter, irrespective of whether proceedings with respect to the order have previously been initiated or become final under subsection (a) of this section.

15 U.S.C. 1395:

(a) *Scope of research*

The Secretary shall conduct research, testing, development, and training necessary to carry out the purposes of this subchapter, including, but not limited to—

(1) collecting data from any source for the purpose of determining the relationship between motor vehicle or motor vehicle equipment performance characteristics and (A) accidents involving motor vehicles, and (B) the occurrence of death, or personal injury resulting from such accidents;

(2) procuring (by negotiation or otherwise) experimental and other motor vehicles or motor vehicle equipment for research and testing purposes;

(3) selling or otherwise disposing of test motor vehicles and motor vehicle equipment

and reimbursing the proceeds of such sale or disposal into the current appropriation available for the purpose of carrying out this subchapter.

(b) *Grants for research*

The Secretary is authorized to conduct research, testing, development, and training as authorized to be carried out by subsection (a) of this section by making grants for the conduct of such research, testing, development, and training to States, interstate agencies, and nonprofit institutions.

15 U.S.C. 1397:

(a)(1) No person shall—

(A) manufacture for sale, sell, offer for sale, or introduce or deliver for introduction in interstate commerce, or import into the United States, any motor vehicle or item of motor vehicle equipment manufactured on or after the date any applicable Federal motor vehicle safety standard takes effect under this subchapter unless it is in conformity with such standard except as provided in subsection (b) of this section;

* * * * *

(C) fail to issue a certificate required by section 1403 of this title or issue a certificate to the effect that a motor vehicle or item of motor vehicle equipment conforms to all applicable Federal motor vehicle safety standards, if such person in the exercise of

due care has reason to know that such certificate is false or misleading in a material respect;

15 U.S.C. 1398:

(a) Whoever violates any provision of section 1397 of this title, or any regulation issued thereunder, shall be subject to a civil penalty of not to exceed $1,000 for each such violation. Such violation of a provision of section 1397 of this title, or regulations issued thereunder, shall constitute a separate violation with respect to each motor vehicle or item of motor vehicle equipment or with respect to each failure or refusal to allow or perform an act required thereby, except that the maximum civil penalty shall not exceed $800,000 for any related series of violations.

(b) Any such civil penalty may be compromised by the Secretary. In determining the amount of such penalty, or the amount agreed upon in compromise, the appropriateness of such penalty to the size of the business of the person charged and the gravity of the violation shall be considered. The amount of such penalty, when finally determined, or the amount agreed upon in compromise, may be deducted from any sums owing by the United States to the person charged.

15 U.S.C. 1403:

Every manufacturer or distributor of a motor vehicle or motor vehicle equipment shall furnish

to the distributor or dealer at the time of delivery of such vehicle or equipment by such manufacturer or distributor the certification that each such vehicle or item of motor vehicle equipment conforms to all applicable Federal motor vehicle safety standards. In the case of an item of motor vehicle equipment such certification may be in the form of a label or tag on such item or on the outside of a container in which such item is delivered. In the case of a motor vehicle such certification shall be in the form of a label or tag permanently affixed to such motor vehicle.

15 U.S.C. 1411:

If a manufacturer—

(1) obtains knowledge that any motor vehicle or item of replacement equipment manufactured by him contains a defect and determines in good faith that such defect relates to motor vehicle safety; or

(2) determines in good faith that such vehicle or item of replacement equipment does not comply with an applicable Federal motor vehicle safety standard prescribed pursuant to section 1392 of this title;

he shall furnish notification to the Secretary and to owners, purchasers, and dealers, in accordance with section 1413 of this title, and he shall remedy the defect or failure to comply in accordance with section 1414 of this title.

15 U.S.C. 1414:

(a) *Manner of remedying defect or failure to comply*

(1) If notification is required under section 1411 of this title or by an order under section 1412(b) of this title, with respect to any motor vehicle or item of replacement equipment which fails to comply with an applicable Federal motor vehicle safety standard or contains a defect which relates to motor vehicle safety, then the manufacturer of each such motor vehicle or item of replacement equipment presented for remedy pursuant to such notification shall cause such defect or failure to comply in such motor vehicle or such item of replacement equipment to be remedied without charge. In the case of notification required by an order under section 1412(b) of this title, the preceding sentence shall not apply during any period during which enforcement of the order has been restrained in an action to which section 1415(a) of this title applies or if such order has been set aside in such an action.

(2)(A) In the case of a motor vehicle presented for remedy pursuant to such notification, the manufacturer (subject to subsection (b) of this section) shall cause the vehicle to be remedied by whichever of the following means he elects:

(i) By repairing such vehicle.

(ii) By replacing such motor vehicle without charge, with an identical or reasonably equivalent vehicle.

(iii) By refunding the purchase price of such motor vehicle in full, less a reasonable allowance for depreciation.

Replacement or refund may be subject to such conditions imposed by the manufacturer as the Secretary may permit by regulation.

(B) In the case of an item of replacement equipment the manufacturer shall (at his election) cause either the repair of such item of replacement equipment, or the replacement of such item of replacement equipment without charge with an identical or reasonably equivalent item of replacement equipment.

(3) The dealer who effects remedy pursuant to this section without charge shall receive fair and equitable reimbursement for such remedy from the manufacturer.

APPENDIX D

FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

(49 C.F.R. 571.121 *et seq.*)

S1. *Scope.* This standard establishes performance and equipment requirements for braking systems on vehicles equipped with air brake systems.

S2. *Purpose.* The purpose of this standard is to insure safe braking performance under normal and emergency conditions.

S3. *Application.* This standard applies to trucks, buses, and trailers equipped with air brake systems. However, it does not apply to a fire fighting vehicle manufactured before June 1, 1976, or a heavy hauler trailer manufactured before September 1, 1977, or to any vehicle manufactured before September 1, 1977, that has a gross axle weight rating (GAWR) for any axle of 24,000 pounds or more, two or more front steerable axles with a GAWR of 16,000 pounds or more for each axle, or to any vehicle which, in combination with another vehicle, constitutes a part of an "auto transporter" as defined in S4.

In addition, the standard does not apply to any trailer whose unloaded vehicle weight is not less than 95 percent of its GVWR, or any vehicle that meets any one of criteria (a) through (d), as follows:

(a) An overall vehicle width of 108 inches or more;

(b) An axle that has a GAWR of 29,000 pounds or more;

(c) A speed attainable in 2 miles of not more than 33 mph; or

(d)(1) A speed attainable in 2 miles of not more than 45 mph; and

(2) An unloaded vehicle weight that is not less than 95 percent of the vehicle GVWR; and

(3) No passenger-carrying capacity.

S4. *Definitions.*

"Air brake system" means a system that uses air as a medium for transmitting pressure or force from the driver control to the service brake, but does not include a system that uses compressed air or vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

"Antilock system" means a portion of a service brake system that automatically controls the degree of rotational wheel slip at one or more road wheels of the vehicle during braking.

"Heavy hauler trailer" means a trailer with one or more of the following characteristics:

(1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or

(2) Its body consists only of a platform whose primary cargo-carrying surface is not more than 40 inches above the ground in an unloaded condition, except that it may include sides that are designed to be easily removable and a permanent "front-end structure" as that term is used in § 393.106 of this title.

"Auto transporter" means a truck and a trailer designed for use in combination to transport motor vehicles, in that the towing vehicle is designed to carry cargo at a location other than the fifth wheel and to load this cargo only by means of the towed vehicle.

"Speed attainable in 2 miles" means the speed attainable by accelerating at maximum rate from a standing start for 2 miles on a level surface.

"Skid number" means the frictional resistance of a payment measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 m.p.h., omitting water delivery as specified in paragraph 7.1 of that method.

S5. *Requirements.* Each vehicle shall meet the following requirements under the conditions specified in S6.

S5.1 *Required equipment—trucks and buses.* Each truck and bus shall have the following equipment:

S5.1.1 *Air compressor.* An air compressor of sufficient capacity to increase air pressure in the supply and service reservoirs from 85 pounds per square inch (p.s.i.) to 100 p.s.i. when the engine is operating at the vehicle manufacturer's maximum recommended r.p.m. within a time, in seconds, determined by the quotient.

$$\frac{\text{Actual reservoir capacity X 25}}{\text{Required reservoir capacity}}$$

S5.1.2 *Reservoirs.* One or more service reservoir systems, from which air is delivered to the brake

chambers, and either an automatic condensate drain valve for each service reservoir or a supply reservoir between the service reservoir system and the source of air pressure.

S5.1.2.1 The combined volume of all service reservoirs and supply reservoirs shall be at least 12 times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms.

S5.1.2.2 Each reservoir shall be capable of withstanding an internal hydrostatic pressure of five times the compressor output pressure or 500 p.s.i., whichever is greater, for 10 minutes.

S5.1.2.3 Each service reservoir system shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and the source of air pressure, by check valves or equivalent devices whose proper functioning can be checked without disconnecting any air line or fitting.

S5.1.2.4 Each reservoir shall have a condensate drain valve that can be manually operated.

S5.1.3 *Towing vehicle protection system.* If the vehicle is intended to tow another vehicle equipped with air brakes, a system to protect the air pressure in the towing vehicle from the effects of a loss of air pressure in the towed vehicle.

S5.1.4 *Pressure gauge.* A pressure gauge in each service brake system, readily visible to a person seated in the normal driving position, that indicates the service reservoir system air pressure. The accuracy of the gauge shall be within plus or minus 7 percent of the compressor cutout pressure.

S5.1.5 *Warning signal.* A signal, other than a pressure gauge, that gives a continuous warning to a person in the normal driving position when the ignition is in the "on" or "run" position and the air pressure in the service reservoir system is below 60 p.s.i. The signal shall be either visible within the driver's forward field of view, or both audible and visible.

S5.1.6 *Antilock warning signal.* A signal on each vehicle equipped with an antilock system that gives a continuous warning to a person in the normal driving position when the ignition is in the "on" or "run" position in the event of a total electrical failure of the antilock system. The signal shall be either visible within the driver's forward field of view or both audible, for a duration of at least 10 seconds, and continuously visible. The signal shall operate in the specified manner each time the ignition is returned to the "on" or "run" position.

S5.1.7 *Service brake stop lamp switch.* A switch that lights the stop lamps when the service brake control is statistically depressed to a point that produces a pressure of 6 p.s.i. or less in the service brake chambers.

S5.2 *Required equipment-trailers.* Each trailer shall have the following equipment:

S5.2.1 *Reservoirs.* One or more reservoirs to which the air is delivered from the towing vehicle.

S5.2.1.1 A reservoir shall be provided that is capable, when pressurized to 90 p.s.i., of releasing the

vehicle's parking brakes at least once and that is unaffected by a loss of air pressure in the service brake system.

S5.2.1.2 Total service reservoir volume shall be at least eight times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms.

S5.2.1.3 Each reservoir shall be capable of withstanding an internal hydrostatic pressure of 500 p.s.i. for 10 minutes.

S5.2.1.4 Each reservoir shall have a condensate drain valve that can be manually operated.

S5.2.1.5 Each service reservoir shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and its source of air pressure by check valves or equivalent devices.

S5.3 *Service brakes-road tests.* The service brake system on each truck and bus shall, under the conditions of S6.1, meet the requirements of S5.3.1, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard. The service brake system on each trailer shall, under the conditions of S6.1, meet the requirements of S5.3.2, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard.

However, the truck and trailer portions of an auto transporter (if both are manufactured after September 1, 1976), shall, in combination, meet the requirements of S5.3.1 as they apply to a single unit

truck or bus, in place of the requirements of S5.3.2 as they apply to the trailer portion, and in place of the requirements of S5.3.1 as they apply to the truck portion in the loaded condition.

S5.3.1 *Stopping distance-trucks and buses.* Except for a bus manufactured before January 1, 1977, and except as provided in S5.3.1.2 and S5.3.1.3, when stopped six times for each combination of weight, speed, and road condition specified in S5.3.1.1, in the sequence specified in Table I, the vehicle shall stop at least once in not more than the distance specified in Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway and without lockup of any wheel at speeds above 10 mph except for:

(a) Controlled lockup of wheels allowed by an anti-lock system, or

(b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable, nonsteerable axles on a vehicle with more than two nonsteerable axles.

S5.3.1.1 Stop the vehicle from 60 m.p.h. and 20 m.p.h. on a surface with a skid number of 75, and from 20 m.p.h. on a wet surface with a skid number of 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation). If the speed attainable in 2 miles is less than 60 m.p.h., the vehicle shall stop from a speed in Table II that is 4 to 8 m.p.h. less than the speed attainable in 2 miles.

TABLE I—STOPPING SEQUENCE

1. Burnish.
2. Control trailer service brake stops at 60 mi/h (for truck-tractors tested with a control trailer in accordance with S6.1.10.6).
3. Control trailer emergency brake stops at 60 mi/h (for truck-tractors tested with a control trailer in accordance with S6.1.10.7).
4. Stops with vehicle at gross vehicle weight rating:
   (a) 20 mi/h service brake stops on skid number of 75.
   (b) 60 mi/h service brake stops on skid number of 75.
   (c) 20 mi/h service brake stops on skid number of 30.
   (d) 20 mi/h emergency brake stops on skid number of 75.
   (e) 60 mi/ emergency brake stops on skid number of 75.
5. Parking brake test with vehicle loaded to gross vehicle weight rating.
6. Stops with vehicle at unloaded weight plus 500 lb.:
   (a) 20 mi/h service brake stops on skid number of 75.
   (b) 60 mi/h service brake stops on skid number of 75.
   (c) 20 mi/h service brake stops on skid number of 30.
   (b) 20 mi/h emergency brake stop on skid number of 75.
   (e) 60 mi/h emergency brake stops on skid number of 75.
7. Parking brake test with vehicle at unloaded weight plus 500 lb.

S5.3.1.2 When stopped in accordance with S5.3.1, with its brakes fully applied, a truck manufactured before September 1, 1977, that has a front steerable non-driving axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle with a GAWR of less than 18,000 pounds, and a truck manufactured before September 1, 1975, that has a front steerable drive axle of any GAWR, need not meet the requirement that it stop in the distance specified in Table II

TABLE II—STOPPING DISTANCE FEET

Vehicle speed in miles per hour	Service brake		Emergency brake, skid No. 75	
	Skid No. 75 (1)	Skid No. 30 (2)	(3)	(4)
20	35	60	83	85
25	53	—	123	131
30	75	—	170	186
35	101	—	225	250
40	131	—	288	325
45	165	—	358	400
50	203	—	435	504
55	246	—	520	608
60	293	—	613	720

for stops on a surface with a skid number of 75 if the brakes on its front axle conform to the retardation formula and Column 1 values of S5.4.1. These vehicles must nevertheless meet the requirements of staying within the 12-foot lane and those relating to wheel lock-up.

S5.3.2 *Stopping capability-trailers.* When tested at each combination of weight, speed, and road condition specified in S5.3.2.1, in the sequence specified in Table I, with air pressure of 90 p.s.i. in the control line and service reservoir system and with no application of the towing vehicle's brakes, a trailer shall stop without any part of the trailer leaving the roadway and without lockup of any wheel at speeds above 10 mph, except for

(a) Controlled lockup of wheels allowed by an antilock system, or

(b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable, nonsteerable axles on a trailer with more than two nonsteerable axles.

S5.3.2.1 Stop the vehicle from 60 m.p.h. and 20 m.p.h. on a surface with skid number of 75, and from 20 m.p.h. on a wet surface with a skid number of 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including instrumentation).

S5.3.3 *Brake actuation time.* With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 psi in not more than 0.45 seconds in the case of trucks and buses, 0.35 seconds in the case of trailer converter dollies. A vehicle designed to tow a vehicle equipped with air brakes shall be capable of meeting the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its brake system connected to the test rig shown in Figure 1.

S5.3.4 *Brake release time.* With an initial service brake chamber air pressure of 95 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 psi in not more than 0.55 seconds in the case of trucks and buses, and fall to 5 psi in not more than 0.65 seconds in the case of trailers, including trailer

convertible dollies. A vehicle designed to tow another vehicle equipped with air brakes shall be capable of meeting the above release time requirement with a 50-cubic-inch test reservoir connected to the control line coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirements with its brake system connected to the test rig shown in Figure 1.

S5.4 *Service brake system-dynamometer tests.* When tested without prior road testing, under the conditions of S6.2, each brake assembly shall meet the requirements of S5.4.1, S5.4.2, and S5.4.3 when tested in sequence and without adjustments other than those specified in the standard. For purposes of the requirements of S5.4.2, and S5.4.3, an average deceleration rate is the change in velocity divided by the deceleration time measured from the onset of deceleration.

S5.4.1 *Brake retardation force.* The sum of the retardation forces exerted by the brakes on each vehicle designed to be towed by another vehicle equipped with air brakes shall be such that the quotient

$$\frac{\text{sum of the brake retardation forces}}{\text{sum of GAWR}}$$

relative to brake chamber air pressure, shall have values not less than those shown in Column 1 of Table III. Retardation force shall be determined as follows:

S5.4.1.1 After burnishing the brake pursuant to S6.2.6, retain the brake assembly on the inertia dynamometer. With an initial brake temperature between 125°F. and 200°F., conduct a stop from 50 m.p.h., maintaining brake chamber air pressure at a constant 20 p.s.i. Measure the average torque exerted by the brake from the time the specified air pressure is reached until the brake stops and divide by the static loaded tire radius specified by the tire manufacturer to determine the retardation force. Repeat the procedure six times, increasing p.s.i. each time. After each stop, rotate the brake drum or disc until the temperature of the brake falls to between 125°F. and 200°F.

S5.4.2 *Brake power.* When mounted on an inertia dynamometer, each brake shall be capable of making 10 consecutive decelerations at an average rate of 9 f.p.s.p.s. from 50 m.p.h. to 15 m.p.h., at equal intervals of 72 seconds, and shall be capable of decelerating to a stop from 20 m.p.h. at an average deceleration rate of 14 f.p.s.p.s. 1 minute after the 10th deceleration. The series of decelerations shall be conducted as follows:

S5.4.2.1 With an initial brake temperature between 150°F. and 200°F. for the first brake application, and the drum or disc rotating at a speed equivalent to 50 m.p.h., apply the brake and decelerate at an average deceleration rate of 9 f.p.s.p.s. to 15 m.p.h. Upon reaching 15 m.p.h., accelerate to 50 m.p.h. and apply the brake for a second time 72 seconds after the start of the first application. Repeat the cycle until 10 decelerations have been made. The

service line air pressure shall not exceed 90 p.s.i. during any deceleration.

S5.4.2.2 One minute after the end of the last deceleration required by S5.4.2.1 and with the drum or disc rotating at a speed of 20 m.p.h., decelerate to a stop at an average deceleration rate of 14 f.p.s.p.s. The service brake line air pressure shall not exceed 100 p.s.i. during any deceleration.

S5.4.2.2 One minute after the end of the last deceleration required by S5.4.2.1 and with the drum or disc rotating at a speed of 20 m.p.h., decelerate to a stop at an average deceleration rate of 14 f.p.s.p.s.

S5.4.3 *Brake recovery.* Starting 2 minutes after completing the tests required by S5.4.2, the brake of a vehicle other than either front axle brake of a truck-tractor shall be capable of making 20 consecutive stops from 30 mph at an average deceleration rate of 12 f.p.s.p.s., at equal intervals of 1 minute measured from the start of each brake application. The service line air pressure needed to attain a rate of 12 f.p.s.p.s. shall be not more than 85 psi, and not less than 20 psi for a brake not subject to the control of an antilock system, or 12 psi for brake subject to the control of an antilock system.

S5.5 *Antilock system.*

S5.5.1 *Antilock system failure.* On a vehicle equipped with an antilock system, electrical failure of any part of the antilock system shall not increase the actuation and release times of the service brakes.

FIGURE 1

TRAILER TEST RIG

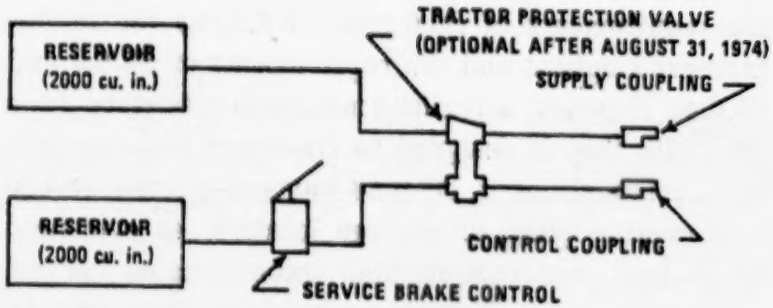


TABLE III—BRAKE RETARDATION FORCE

Brake retardation force, GAWR Col. 1	Brake chamber pressure, psi, Col. 2
0.05	20
0.12	30
0.18	40
0.25	50
0.31	60
0.37	70
0.41	80

S5.5.2 *Antilock system power-trailers.* On a trailer equipped with an antilock system that requires electrical power for operation, the power shall be obtained from the stop lamp circuit. Additional cir-

cuits may also be used to obtain redundant sources of electrical power.

S5.6 *Parking brake system.* Each vehicle other than a trailer converter dolly shall have a parking brake system that under the conditions of S6.1 meets the requirements of S5.6.1 or S5.6.2, at the manufacturer's option, and the requirements of S5.6.3 and S5.6.4. However, a trailer manufactured before June 30, 1976, that is designed to transport bulk agricultural commodities in off-road harvesting sites and to a processing plant or storage location, as evidenced by skeletal construction that accommodates harvest containers, a maximum length of 28 feet, and an arrangement of air control lines and reservoirs that minimizes damage in field operations, shall meet the requirements of this section or, at the option of the manufacturer, the requirements of § 393.43 of this title.

S5.6.1 *Static retardation force.* With all other brakes rendered inoperative, during a static drawbar pull in a forward or rearward direction, the static retardation force produced by the application of the parking brakes shall be:

(a) In the case of a vehicle other than a truck-tractor that is equipped with more than two axles, such that the quotient

$$\frac{\textit{static retardation force}}{\text{GAWR}}$$

is not less than 0.28 for any axle other than a steerable front axle; and

(b) In the case of a truck-tractor that is equipped with more than two axles, such that the quotient

$$\frac{\textit{static retardation force}}{\text{GAWR}}$$

is not less than 0.14.

S5.6.2 *Grade holding.* With all parking brakes applied, the vehicle shall remain stationary facing uphill and facing downhill in a smooth, dry portland cement concrete roadway with a 20-percent grade, both (a) when loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation).

S5.6.3 *Application and holding.* The parking brakes shall be applied by an energy source that is not affected by loss of air pressure or brake fluid pressure in the service brake system. Once applied, the parking brakes shall be held in the applied position solely by mechanical means.

S5.6.4 *Parking brake control-trucks and buses.* The parking brake control shall be separate from the service brake control. It shall be operable by a person seated in the normal driving position. The control shall be identified in a manner that specifies the method of control operation. The parking brake control shall control the parking brakes of the vehicle and of any air braked vehicle that it is designed to tow.

S5.7 *Emergency braking capability-trucks and buses.* Each truck and bus shall have a braking system with emergency braking capability that meets the requirements of S5.7.1, or, at the manufacturer's option, the requirements of S5.7.2.

S5.7.1 *Parking brake system with automatic application.* Each vehicle shall have a parking brake system acting on each axle, except steerable front axles, that conforms to S5.6 and that meets the following requirements:

S5.7.1.1 *Automatic application.* The parking brakes shall be automatically applied and the supply line to any towed vehicle vented to atmospheric pressure when the air pressure in all service reservoirs is less than the automatic application pressure level. The automatic application pressure level shall be between 20 and 45 p.s.i.

S5.7.1.2 *Automatic braking performance.* With the parking brake automatically applied, a vehicle shall either be capable of meeting the requirements of S5.7.2.3, with distances measured from the point of automatic application, or shall have a static retardation force quotient not greater than 0.40 for any axle, determined in accordance with S5.6.1.

S5.7.1.3 *Release after automatic application.* After automatic application, the parking brakes shall be releasable at least once by means of a parking brake control. The parking brakes shall be releasable only if they can be automatically reapplied and exert the force required by S5.6 immediately after release.

S5.7.1.4 *Manual operation.* The parking brakes shall be manually operable and releasable when the air pressure in the service reservoir system is sufficient to keep the parking brakes from automatically applying.

S5.7.2 *Modulated emergency braking system.* Each vehicle that does not have a parking brake system that is automatically applied in the event of air pressure loss shall have a parking brake system conforming to S5.6 that is capable of manual application at any reservoir system pressure level, and shall have an emergency braking system that meets the following requirements.

TABLE IV

Series	Snubs	Snub conditions (highest speed specified in miles per hour)
1	175	40-20
2	25	45-20
3	25	50-20
4	25	55-20
5	250	60-20

S5.7.2.1 *Emergency braking control.* The emergency braking system shall be controlled by the service brake control or the parking brake control. The control for the emergency braking system shall control the brakes on any towed vehicle equipped with air brakes.

S5.7.2.2 *Emergency braking system failure.* In the event of a failure of a valve, manifold, brake fluid

housing, or brake chamber housing that is common to the service brake and emergency braking systems, loss of air shall not cause the parking brake to be inoperable.

S5.7.2.3 *Emergency braking stopping distance.* Except as specified in S5.7.2.3.1 and S5.7.2.3.2, when stopped six times for each combination of weight and speed specified in S5.3.1.1 on a road surface with a skid number of 75, with a single failure in the service brake system of a part designed to contain compressed air or brake fluid (except failure of a common valve, manifold, brake fluid housing, or brake chamber housing), the vehicle shall stop at least once in not more than the distance specified in column 3 of Table II, measured from the point at which movement of the brake control begins, without any part of the vehicle leaving the roadway, except that a truck-tractor tested at its unloaded vehicle weight plus 500 pounds shall stop at least once in not more than the distance specified in Column 4 of Table II.

S5.7.2.3.1 A truck manufactured before September 1, 1976, that has a front steerable non-driving axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle with a GAWR of less than 18,000 pounds, and a truck manufactured before September 1, 1975, that has a front steerable drive axle of any GAWR, must stop in accordance with S5.7.2.3 without any part of the vehicle leaving the roadway, but need not stop in the distances specified.

S5.7.2.3.2 When stopped in accordance with S5.7.2.3, a truck or bus manufactured before September 1, 1975, other than a truck described in S5.7.2.3.1, shall stop at least once for each speed and weight condition on a surface with a skid number of 75 in not more than the distance specified in Table IIa, instead of meeting the stopping distances specified in Table II for stops on a surface with a skid number of 75.

Effective date. September 1, 1976.

S5.7 *Emergency brake system-trucks and buses.* Each vehicle shall be equipped with an emergency brake system which, under the conditions of S6.1, conforms to the requirements of S5.7.1 through S5.7.3. The emergency brake system may be a part of the service brake system or incorporate portions of the service brake and parking brake systems.

S5.7.1 *Emergency brake system performance.* When stopped six times for each combination of weight and speed specified in S5.3.1.1 on a road surface with a skid number of 75 with a single failure in the service brake system of a part designed to contain compressed air or brake fluid (except failure of a common valve, manifold, brake fluid housing, or brake chamber housing), the vehicle shall stop at least once in not more than the distance specified in Column 3 of Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway, except that a truck-tractor tested at its unloaded vehicle weight plus 500 pounds shall stop at least once in not more than the distance specified in Column 4 of Table II.

S5.7.2 *Emergency brake system operation.* The emergency brake system shall be applied and released, and be capable of modulation, by means of the service brake control.

S.5.7.3 *Towing vehicle emergency brake requirements.* In addition to meeting the other requirements of S5.7, a vehicle designed to tow another vehicle equipped with air brakes shall—

(a) In the case of a truck-tractor in the unloaded condition and a single unit truck which is capable of towing an air-brake equipped vehicle and is loaded to gross vehicle weight rating, be capable of meeting the requirements of S5.7.1 by operation of the service brake control only, with the trailer air supply line and air control line from the towing vehicle vented to the atmosphere in accordance with S6.1.14;

(b) In the case of a truck-tractor loaded to gross vehicle weight rating, be capable of meeting S5.7.1 by operation of the service brake control only, with the air control line from the towing vehicle vented to the atmosphere in accordance with S6.1.14; and

(c) Be capable of modulating the air in the supply or control line to the trailer by means of the service brake control with a single failure in the towing vehicle service brake system as specified in S5.7.1.

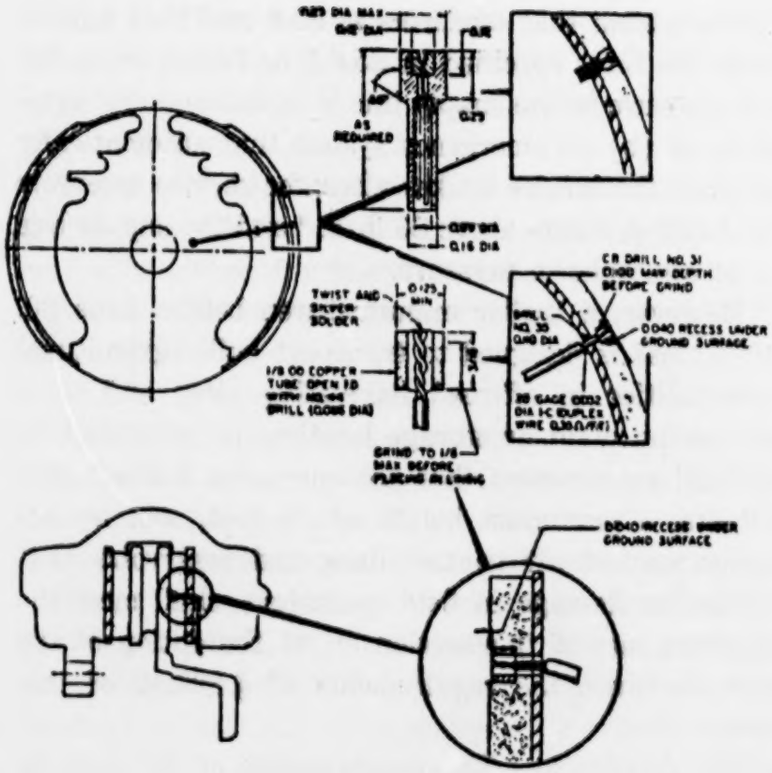


FIG. 2

THERMOCOUPLE INSTALLATION

S5.8 *Emergency braking capability-trailers.* Each trailer other than a trailer converter dolly shall have a parking brake system that conforms to S5.6 and that applies with the force specified in S5.6.1 or S5.6.2 when the air pressure in the supply line is at atmospheric pressure. A trailer converter dolly shall have, at the manufacturer's option, (a) a parking

brake system that conforms to S5.6 and that applies with the force specified in S5.6.1 or S5.6.2 when the air pressure in the supply line is at atmospheric pressure, or (b) an emergency system that automatically controls the service brakes when the service reservoir is at any pressure above 20 lb/in^2 and the supply line is at atmospheric pressure.

However, a trailer manufactured before June 30, 1976, that is designed to transport bulk agricultural commodities in off-road harvesting sites and to a processing plant or storage location, as evidenced by skeletal construction that accommodates harvest containers, a maximum length of 28 feet, and an arrangement of air control lines and reservoirs that minimizes damage in field operations, shall meet the requirements of this section or, at the option of the manufacturer, the requirements of § 393.43 of this title.

S6. *Conditions.* The requirements of S5 shall be met under the following conditions. Where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range.

S6.1 *Road test conditions.*

S6.1.1. Except as otherwise specified the vehicle is loaded to its gross vehicle weight rating, distributed proportionately to its gross axle weight ratings.

S6.1.2 The inflation pressure is as specified by the vehicle manufacturer for the gross vehicle weight rating.

S6.1.3 Unless otherwise specified, the transmission selector control is in neutral or the clutch is disengaged during all decelerations and during static parking brake tests.

S6.1.4 All vehicle openings (doors, windows, hood, trunk, cargo doors, etc.) are in a closed position except as required for instrumentation purposes.

S6.1.5 The ambient temperature is between 32°F. and 100°F.

S6.1.6 The wind velocity is zero.

S6.1.7 Stopping tests are conducted on a 12-foot wide level roadway having a skid number of 75, unless otherwise specified. The vehicle is alined in the center of the roadway at the beginning of a stop.

S6.1.8 The brakes on a vehicle manufactured before September 1, 1976, are burnished before testing, at the manufacturer's option, in accordance with S6.1.8.1 or S6.1.8.2. The brakes on a vehicle manufactured on or after September 1, 1976, are burnished before testing in accordance with S6.1.8.1. However, for vehicles with parking brake systems not utilizing the service brake friction elements, burnish the friction elements of such systems prior to the parking brake test according to the manufacturer's recommendations.

S6.1.8.1 With the transmission in the highest gear appropriate for the series given in Table IV make 500 brake applications at a deceleration rate of 10 ft/s/s, or at the vehicle's maximum deceleration rate, if less than 10 ft/s/s, in the sequence specified in Table IV.

After each brake application, accelerate to the speed specified and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If a vehicle cannot attain the specified speed in 1 mile, continue to accelerate until the specified speed is reached or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application. If during any of the brake applications specified in Table IV, the hottest brake reaches 500°F, make the remainder of the 500 applications from that snub condition except that a higher or lower snub condition shall be used as necessary to maintain an after-stop temperature of 500°F. ± 50°F. Any automatic pressure limiting valve is in use to limit pressure as designed, except that any automatic front axle pressure limiting valve is bypassed if the temperature of the hottest brake on a rear axle exceeds the temperature of the hottest brake on a front axle by more than 125°F. A bypassed valve is reconnected if the temperature of the hottest brake on a front axle exceeds the temperature of the hottest brake on a rear axle by 100°F. After burnishing, adjust the brakes as recommended by the vehicle manufacturer.

S6.1.8.2 With the transmission in the highest gear range appropriate for 40 mph, make 400 brake applications from 40 mph to 20 mph at 10 ft/s/s. After each brake application accelerate to 40 mph and maintain that speed until making the next application at a point 1.5 miles from the point of the previous

brake application. After burnishing, adjust the brakes as recommended by the vehicle manufacturer.

S6.1.9 Static parking brake tests for a semitrailer are conducted with the front-end supported by an unbraked dolly. The weight of the dolly is included as part of the trailer load.

S6.1.10. In a test other than a static parking brake test, a truck-tractor manufactured before September 1, 1976, is tested at its gross vehicle weight rating by loading it without a trailer or, at the manufacturer's option, by coupling it to a flatbed semitrailer (hereafter, control trailer) as specified in S6.1.10.1 to S6.1.10.7. In a test other than a static parking brake test, a truck-tractor manufactured on or after September 1, 1976, is tested at its gross vehicle weight rating by coupling it to a control trailer as specified in S6.1.10.1 to S6.1.10.7.

S6.1.10.1 The control trailer conforms to this standard.

S6.1.10.2 The center of gravity of the loaded control trailer is on the trailer's longitudinal centerline at a height of 66 ± 3 in. above the ground.

S6.1.10.3 For a truck-tractor with a rear axle gross axle weight rating of 26,000 lb. or less, the control trailer has a single axle with a gross axle weight rating of 18,000 lb. and a length, measured from the transverse centerline of the axle to the centerline of the kingpin, of 258 ± 6 in.

S6.1.10.4 For a truck-tractor with a total rear axle gross axle weight rating of more than 26,000 lb.

the control trailer has a tandem axle with a combined gross axle weight rating of 32,000 lb. and a length, measured from the transverse centerline between the axles to the centerline of the kingpin, of 390 ± 6 in.

S6.1.10.5 The control trailer is loaded so that its axle is loaded to its gross axle weight rating and the tractor is loaded to its gross vehicle weight rating, with the tractor's fifth wheel adjusted so that the load on each axle measured at the tire-ground interface is most nearly proportional to the axles' respective gross axle weight ratings.

S6.1.10.6 *Test equipment specification.* The control trailer's service brakes are capable of stopping the combination from the maximum speed at which the tractor is tested, under the conditions of S6.1, without assistance from the tractor brakes, in the distance found by multiplying the value 68, 90, 115, 143, 174, 208, or 245 (corresponding to a speed of 30, 35, 40, 45, 50, 55, or 60 mph as appropriate for the truck-tractor tested) by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the tractor's fifth wheel adjusted as specified in S6.1.10.5, the trailer service reservoirs pressurized to 100 lb/in², and the trailer loaded so that its axle is at gross axle weight rating and its kingpin is at empty vehicle weight. The stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. The service brake

chambers on the trailer reach 60 lb/in² in not less than 0.20 second and not more than 0.30 second, measured from the instant at which movement of the valve controlling the trailer brakes begins.

S6.1.10.7 *Test equipment specification.* The control trailer's emergency brakes are capable of stopping the combination under the conditions of S6.1 from the maximum speed at which the tractor is tested, without assistance from the tractor's brakes, in the distance found by multiplying the emergency brake stopping distance in column 3 of Table II by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the combination loaded in accordance with S6.1.10.5. Stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. In the case of control trailers that utilize parking brakes for emergency stopping capability, the pressure in the trailer's spring parking brake chambers falls from 95 lb/in² to 5 lb/in² in not less than 0.50 second and not more than 0.60 second, measured from the instant at which movement of the valve controlling the trailer's spring parking brakes begins.

S6.1.11 *Special drive conditions.* A vehicle equipped with an interlocking axle system or a front wheel drive system that is engaged and disengaged by the driver is tested with the system disengaged.

S6.1.12 *Liftable axles.* A vehicle with a liftable axle is tested at gross vehicle weight rating with the liftable axle down and at unloaded vehicle weight with the liftable axle up.

After September 1, 1975, the trailer test rig shown in Figure I is capable of increasing the pressure in a 50 cubic inch reservoir from atmospheric to 60 lb/in² in 0.06 second, measured from the first movement of the service brake control to apply service brake pressure and of releasing pressure in such a reservoir from 95 to 5 lb/in² in 0.22 second measured from the first movement of the service brake control to release service brake pressure.

Effective date. September 1, 1976.

S6.1.14 In testing the emergency braking system of towing vehicles under S5.7.3(a) and S5.7.3(b), the hose(s) is vented to the atmosphere at any time not less than 1 second and not more than 1 minute before the emergency stop begins, while the vehicle is moving at the speed from which the stop is to be made and any manual control for the towing vehicle protection system is in the position to supply air and brake control signals to the vehicle being towed. No brake application is made from the time the line(s) is vented until the emergency stop begins and no manual operation of the parking brake system or towing vehicle protection system occurs from the time the line(s) is vented until the stop is completed.

S6.2 *Dynamometer test conditions.*

S6.2.1 The dynamometer inertia for each wheel is equivalent to the load on the wheel with the axle loaded to its gross axle weight rating.

S6.2.2 The ambient temperature is between 75°F. and 100°F.

S6.2.3 Air at ambient temperature is directed uniformly and continuously over the brake drum or disc at a velocity of 2,200 feet per minute.

S6.2.4 The temperature of each brake is measured by a single plug-type thermocouple installed in the center of the lining surface of the most heavily loaded shoe or pad as shown in Figure II. The thermocouple is outside any center groove.

S6.2.5 The rate of brake drum or disc rotation on a dynamometer corresponding to the rate of rotation on a vehicle at a given speed is calculated by assuming a tire radius equal to the static loaded radius specified by the tire manufacturer.

S6,2.6 Brakes are burnished before testing as follows: Place the brake assembly on an inertia dynamometer and adjust the brake as recommended by the brake manufacturer. Make 200 stops from 40 m.p.h. at a deceleration of 10 f.p.s.p.s., with an initial brake temperature on each stop of not less than 315°F. and not more than 385°F. Make 200 additional stops from 40 m.p.h. at a deceleration of 10 f.p.s.p.s. with an initial brake temperature on each stop of not less than 450°F. and not more than

550°F. After burnishing, the brakes are adjusted as recommended by the brake manufacturer.

S6.2.7 The brake temperature is increased to a specified level by conducting one or more stops from 40 m.p.h. at a deceleration of 10 f.p.s.p.s. The brake temperature is decreased to a specified level by rotating the drum or disc at a constant 30 m.p.h.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1978 288438 83

Supreme Court, U. S.
FILED
AUG 10 1978
MICHAEL RODAK, JR., CLERK

No. 78-95

IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION,
Petitioners,

v.

PACCAR INC, *et al.*
Respondents.

BRIEF OF RESPONDENTS PACCAR INC. AND AMERICAN TRUCKING ASSOCIATIONS, INC. IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

THOMAS W. HUBER of
HELSELL, FETTERMAN, MARTIN, TODD & HOKANSON
Attorneys for
PACCAR INC
1610 Washington Building
Seattle, Washington 98101

NELSON J. COONEY
General Counsel
AMERICAN TRUCKING ASSOCIATIONS, INC.
1616 P Street, N.W.
Washington D.C. 20036

CRAFTSMAN & MET PRESS SEATTLE, WASHINGTON

SUBJECT INDEX

Page

Statement of the Case — Opinion Below 1

1. Summary of argument—The petition does not meet the considerations governing review contained in Supreme Court Rule 19 3

2. The review sought is limited to determinations of fact 4

3. Petitioners attempt to create an exceptional case by implying the entire standard has been invalidated and that highway accidents will result. These implications are untrue 7

4. Petitioners have distorted the Court of Appeals' opinion in an attempt to create legal issues 9

5. The underlying record supports the Court of Appeals' factual determinations 11

Conclusion 15

Appendix E — Court of Appeals Citations to the Record A-1

Appendix F — Summaries of Testimony Concerning Problems Experienced Under the Standard A-17

Appendix G — Summary of NHTSA's Reliability File A-33

Appendix H — California Highway Patrol Presentation A-40

TABLES OF AUTHORITY

Table of Cases

Chrysler v. Dept. of Transportation, 472 F.2d 659 (6th Cir. 1972) 6

Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 91 S.Ct. 814, 28 L. Ed. 2d 136 (1971) 6, 7, 15

Statutes

Page

5 U.S.C. § 706 6

National Traffic and Motor Vehicle Safety Act of 1966, 80 Stat. 718, as amended, 15 U.S.C. § 1381 *et seq.*

15 U.S.C. § 1391(1) 5
15 U.S.C. § 1391(2) 2, 4, 5
15 U.S.C. § 1392(a) 2, 4, 5
15 U.S.C. § 1392(f)(1) 6, 13-14
15 U.S.C. § 1392(f)(3) 2, 4, 5, 6
15 U.S.C. § 1394(a)(1) 1
15 U.S.C. § 1394(a)(3) 6
15 U.S.C. § 1395(a) 6, 13
15 U.S.C. § 1395(a)(2) 6

28 U.S.C. § 2112 6

IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION,
Petitioners,
v.
PACCAR INC, *et al.*

BRIEF OF RESPONDENTS PACCAR INC. AND AMERICAN TRUCKING ASSOCIATIONS, INC. IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

STATEMENT OF THE CASE—OPINION BELOW

Respondent PACCAR Inc (PACCAR) manufactures custom-built diesel powered airbrake trucks under the names Kenworth and Peterbilt. Federal Motor Vehicle Safety Standard No. 121 (the Standard) establishes air brake system requirements. PACCAR petitioned for judicial review directly with the United States Court of Appeals for the Ninth Circuit, pursuant to 15 U.S.C. §1394 (a)(1). American Trucking Associations, Inc. (ATA), the national organization of the trucking industry, and Truck Equipment & Body Distributors Association (TEBDA), the national organization for "Final Stage" manufacturers, filed similar petitions. The three petitions were consolidated for review.

The heart of the opinion is a holding that one limited

portion of the Standard does not meet the Safety Act requirement of reasonableness and practicability. 15 U.S.C. §§1391(2), (1392(a) and 1392(f)(3). In order to meet this portion of the Standard manufacturers found it necessary to use antilock devices to control wheel lockup during braking. Antilock consists of a minicomputer attached to each axle of the vehicle which "senses" when a wheel begins to lock and momentarily releases the brake to regain traction. When the antilock fails, serious safety problems result, including lateral instability, jackknifing, wheel lockup and pulling to one side. (App. A of Petition, pp. 9a; 14a, n. 26; and 19a-25a.) The court discussed in detail the underlying record and found that "critical problems" with antilock "began with mass production of vehicles designed to meet the Standard." (App. A, 19a.) The court concluded:

> Yet, despite massive evidence presented to NHTSA that many vehicles equipped with antilocks were potentially more dangerous in performance than pre-Standard vehicles, the agency admitted during oral argument in July, 1976, that it had done no compliance testing since the Standard went into effect over a year earlier. Agency attorneys also admitted that prior to the effective date of the Standard, NHTSA had done no reliability testing of vehicles with Standard-121 components whatsoever, other than the testing reviewed in the Murphy Report, which did not include stops at the higher speeds.

(App. A, p. 24a.)

> . . . the comprehensive data before us indicate that there is a strong probability that the performance of a substantial number of vehicles whose braking systems have been altered to include "overpowered" front axles and antilock devices has created a potentially more hazardous highway situation than existed before the Standard became operative. Therefore, until such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid.

(App. A, p. 26a.)

The court also found that certain test procedures did not meet the Safety Act practicability requirement. (App. A, pp. 26a-31a.) Petitioners apparently do not challenge this portion of the opinion since there is no reference to test procedures in the "Questions Presented" section of the Petition and on p. 13, note 8 petitioners affirm that this issue is not being presented to this Court.

1. Summary of Argument—The Petition Does Not Meet the Considerations Governing Review Contained in Supreme Court Rule 19

No federal question of substance is presented by the Petition. The court's decision is not in conflict with any other court of appeals decision. No important question of federal law has been decided. And petitioners do not assert that the court departed from the accepted and usual course of judicial proceedings.

The Petition involves a fact review. The court of appeals reviewed the underlying record in depth and concluded that NHTSA failed to fulfill certain Safety Act requirements. Petitioners seek to have this Court re-review this record. (Section 2, below.)

Petitioners imply the entire Standard has been invalidated, in an effort to make this an "exceptional" case and to make it appear that increased highway accidents will result from such invalidation. This is untrue. Only a small portion of the Standard was invalidated. The reason, in

part, was that the Standard created a more dangerous highway situation than existed prior to its adoption. (Section 3, below.)

The Petition contains numerous distortions of the court of appeals' opinion in an apparent attempt to create legal issues. (Section 4, below.)

The underlying record fully supports the court of appeals' determinations. Four Brief appendices are attached giving a sampling of the extensive record reviewed by the court which documents the myriad problems experienced in attempting to meet the Standard. (Section 5, below.)

2. The Review Sought is Limited to Determinations of Fact. No Substantial Legal Issues are Presented

The first "question presented" by petitioners is whether NHTSA "acted arbitrarily or capriciously in determining that its performance standard for air-braked trucks was 'practicable'." (Pet., p. 2.) Nowhere in the court of appeals' opinion, however, is there a holding that NHTSA was "arbitrary and capricious." Instead the court found that a portion of the Standard did not meet the Safety Act requirements of "reasonableness" and "practicability". (App. A, p. 18a.) 15 U.S.C. §§ 1391(2), 1392(a), and 1392(f)(3). As discussed below at pp. 6 and 7, determining whether a standard meets the Safety Act requirements is one of the functions of a reviewing court.

The second "question presented" is whether "NHTSA must conduct independent tests to assure the reliability of equipment designed" to meet the Standard. (Pet., p. 2.) This statement omits an essential ingredient of the decision, the finding of "substantial evidence received by NHTSA that the 'in-use' performance of vehicles equipped

with antilock was not consistent with the performance required by the Standard and in some circumstances may have been more hazardous than the performance of pre-Standard vehicles." In this situation

> the agency's failure to conduct more intensive testing of trucks and tractor-trailers certified under the Standard was not only unreasonable, but, also, a legal abuse of its discretion.

(App. A, p. 25a.)

The two questions presented involve a factual issue, whether the underlying record supports the court of appeals' conclusion that the Safety Act requirements had not been met.

The Safety Act prescribes the criteria for safety standards, and requires the agency to consider certain factors and to conduct research, testing and development.

A safety standard must:

Be practicable	—15 U.S.C. §§ 1391(2), 1392(a) and (f)(3) (see Note 1 below)
Meet the need for motor vehicle safety	—15 U.S.C. 1391(1) and (2), 1392(a)
Be reasonable	—15 U.S.C. 1392(f)(3)

In prescribing a safety standard NHTSA is required to:

---

1. 15 U.S.C. §1391 was omitted from the rendition of the Safety Act in Appendix C to the Petition. The relevant subsections provide:

> (1) "Motor vehicle safety" means the performance of motor vehicles or motor vehicle equipment in such a manner that the public is protected against unreasonable risk of accidents occurring as a result of the design, construction or performance of motor vehicles and is also protected against unreasonable risk of death or injury to persons in the event accidents do occur, and includes nonoperational safety of such vehicles.
>
> (2) "Motor vehicle safety standards" means a minimum standard for motor vehicle performance, or motor vehicle equipment performance, which is practicable, which meets the need for motor vehicle safety and which provides objective criteria.

Consider relevant motor vehicle safety data including the results of its own research, development, testing and evaluation activities	—15 U.S.C. 1392(f)(1)
Consider whether a proposed standard is reasonable, and practicable	—15 U.S.C. 1392(f)(3)
Conduct research, testing, and development	—15 U.S.C. 1395(a)
Procure experimental and other vehicles and equipment for research and testing	—15 U.S.C. 1395(a)(2)

These requirements are the "statutory minimum substantive criteria against which each automotive safety standard must be tested." *Chrysler v. Dept. of Transportation,* 472 F.2d 659 (6th Cir. 1972) at 668. In addition the Secretary (NHTSA) must "file in the court the record of the proceedings on which the Secretary based his order," 15 U.S.C. § 1394(a), which record must include "all the evidence before the agency," 28 U.S.C. § 2112. The court of appeals must then " 'engage in a substantial inquiry' and a 'thorough, probing in-depth review' " of this record. *Chrysler v. Dept. of Transportation, supra* at 668 and 669, citing *Citizens to Preserve Overton Park v. Volpe,* 401 U.S. 402 at 415, 91 S. Ct. 814, 28 L. Ed. 2d 136 (1971). In *Overton Park* this Court held that when Department of Transportation action is subject to review under the Administrative Procedure Act, 5 U.S.C. § 706 (safety standards are reviewable in this fashion, *see* 15 U.S.C. § 1394(a)(3)), the court must review the underlying record in the manner cited by the court in the *Chrysler* case. The court must decide whether the Secretary "acted within the scope of his authority," whether his action was

"arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" and must consider whether the Secretary's decision "was based on a consideration of the relevant factors and whether there has been a clear error of judgment." *Overton Park, supra,* 401 U.S. 402 at 415 and 416.

Petitioners accept the review criteria in *Citizens to Preserve Overton Park v. Volpe,* citing the case on pp. 15 and 20 of the Petition, and so did the court of appeals, discussing the case at p. 6a of the opinion. (App. A, p. 6a.) The court of appeals did conduct a "thorough, probing in-depth review" of the record and concluded that certain limited portions of the Standard do not meet the Safety Act requirements. Appendix E to this brief consists of quotations from the documents in the record cited by the court, arranged by opinion page and citation number. (This first appendix to this brief is given the designation E to avoid confusion with Petitioner's appendices.) These quotations, which portray the litany of problems plaguing the Standard, fully support the court of appeals' conclusions. It is these factual conclusions about which Petitioners complain, and thus the considerations of Supreme Court Rule 19 have not been met.

3. Petitioners Attempt to Create an Exceptional Case by Implying the Entire Standard has been Invalidated and that Highway Accidents Will Result. These Implications are Untrue

Petitioners repeatedly imply that the entire Standard has been invalidated. It appears their aim is to make this an "exceptional" case (Pet., p. 14), and to raise the spectre of increased highway injuries and deaths if the court of appeals' decision is not overturned. These assertions are

not true. Only a part of the Standard was found invalid. With regard to increased highway hazards the court of appeals found directly to the contrary. It concluded that those parts of the Standard requiring overpowered front axles and antilock devices created "a potentially more hazardous highway situation than existed before the Standard became operative." (App. A, p. 26a; and *see* the full quotations on pp. 2 and 3 of this brief.) The underlying record fully supports this conclusion.

At p. 12 Petitioners state:

> In light of its conclusion about the antilock devices, the court held that the 293-foot braking-distance limitation in the Standard is not "practicable" (see 15 U.S.C. 1392(a)), and therefore concluded that *the Standard is invalid.*

(Emphasis supplied.)

At p. 14 they assert:

> This case, . . . is exceptional. The Standard at issue here is an especially important part of NHTSA's attempt to reduce highway fatalities, and *its invalidation* could lead to deaths and injuries that should be prevented. It is impossible to predict the number of additional accidents that will be caused by the *invalidation of the Standard.*

(Emphasis supplied.)

On p. 21 they pronounce:

> It was error for the court to hold that, because some noncomplying vehicles have been made, *the agency may not enforce the Standard* that was designed to bring about compliance.

(Emphasis supplied.)

Contrary to the above statements, the only portions of the Standard held invalid are one stopping distance requirement, and certain road testing procedures. With regard to the former the court stated:

> [U]ntil such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid.

(App. A, p. 26a.) With regard to road test procedures, the court found invalid the "skid number" method of measuring road surface slickness, and the failure to specify time intervals between tests, duration of permissible wheel lockup during tests, and the amount of curving in test roadways. (App. A, pp. 28a-29a.) The court also invalidated road test requirements for TEBDA members because NHTSA admitted that such testing was beyond their practical and financial capabilities. (App. A, p. 32a.)

The major portion of the Standard is unaffected by the court's decision. The provisions remaining fully in force include: *Required Equipment* (Sections S5.1 and S5.2 of the Standard, App. D, to the Pet., pp. 46a-49a); *Service Brakes Road Tests,* except for stops from 60 mph (Section S5.3, App. D, pp. 49a-54a); *Dynamometer Tests,* (Section S5.4, App. D, pp. 54a-56a); *Parking Brake Systems* (Section S5.6, App. D, pp. 58a-59a); and *Emergency Braking Capability* (Section S5.7, App. D, pp. 60a-64a).

4. Petitioners have Distorted the Court of Appeals Opinion in an Attempt to Create Legal Issues

Throughout this Petition are numerous distortions or misstatements of the court of appeals' opinion. Petitioners' aim apparently is to restructure the opinion so that it contains legal issues which should be reviewed by this Court. No substantial legal issues are presented, however,

and the only question is whether the underlying record supports the court of appeals' determinations of fact.

The first distortion, that the court found that NHTSA acted arbitrarily or capriciously, was discussed above at p. 4. A second distortion or misstatement, that the court invalidated the entire Standard, is discussed in Section 3, above.

On p. 11 petitioners state: "[t]he court acknowledged that, before it promulgated the Standard, NHTSA had confirmed the reliability of antilock devices." There is no such acknowledgment. The court only referred to NHTSA's assertion to that effect in the Federal Register. (App. A, p. 10a.) Again on page 11 petitioners assert the court acknowledged that antilock devices "had been used *successfully* on airplanes and cars." (Emphasis supplied.) The court's statement was that "antilock devices had been used on *some* cars and aircraft." (Emphasis supplied.) (App. A, p. 19a.)

On pp. 11 and 12 the petitioners assert that "the court acknowledged that 'the absolute number of vehicles . . . (evidencing antilock problems) is quite small.'" There was no such acknowledgment. The court was discussing three spot checks of antilock equipped vehicles which showed failure rates of 48%, 59%, and 65%. The court stated that "the absolute number of vehicles represented by these figures is quite small." (App. A, p. 22a.)

At pp. 15 and 16 petitioners assert the court ruled against NHTSA "because problems had arisen in antilock devices made by certain firms." Nowhere does the court state that antilock problems were limited to only certain firms. It is clear from the court's opinion and from the

record presented to the court that antilock problems were experienced by all manufacturers.

On p. 17, petitioners state: "[t]ests performed by NHTSA in 1975 on three antilock-equipped trucks also revealed that the heavy-truck industry possesses the necessary technology to meet the Standard" citing p. 25a of the court's opinion. A similar assertion is made at p. 22, note 18, again citing the opinion. The court made no such statement. The court did refer to tests of three vehicles as part of the "proof" of reliability on which NHTSA was relying, but could not discuss the test results because NHTSA had not yet published them. The tests were completed in July, 1975 and the test report was to be issued "in the near future." (NHTSA July. 1975 progress report, Doc. No. 75-16-No2-125.) At the time the case was submitted to the court in July, 1976, NHTSA's latest published progress report of April, 1976 stated that "preparation of the final report is continuing." (Doc. No. 75-16-No2-184.)

5. The Underlying Record Supports the Court of Appeals' Factual Determinations

As discussed above, the key issue is whether the record supports the court of appeals' determinations. In attacking these determinations, petitioners, except for one reference to a 1969 research contract (Pet., p. 4, n. 2), refer only to their own pronouncements in the Federal Register. Forty-four Federal Register notices were published concerning the Standard prior to the case being submitted to the court of appeals. Not one cites or identifies the tests or documentary materials supposedly supporting NHTSA's findings and pronouncements in the notices.

In contrast is the mass of material in the record sup-

porting the court's conclusions. Appendix E to this brief consists of 18 pages of quotations from the documents cited by the court in support of its findings.

Appendix F consists of summaries of testimony presented at a three day hearing held by NHTSA in October 1975, nine months after the Standard was in full effect, to explore the many problems being reported to NHTSA. (*See* court of appeals reference to the hearing, App. A, p. 13.) The transcript of the hearing testimony is Doc. No. 75-16-No2-042, totalling 561 pages. The summaries of testimony contained in Appendix F were presented to the court in the form of brief appendices. By letter dated March 31, 1976, counsel for PACCAR and the petitioners agreed that such summaries would be part of the administrative record and this was accomplished by NHTSA Doc. No. 75-16-No7-017 of April 26, 1976. Those summaries were numbered and titled as follows:

BA-30 — Testimony Concerning Antilock Dangers

BA-33 — Summary of Testimony Concerning Antilock Problems — By Antilock Manufacturer

BA-35 — Testimony Concerning SS-121 — The Truck Experience

BA-36 — Summary of Documents and Testimony, Radio Frequency Interference.

NHTSA keeps a separate complaint file which it describes as a "reliability file". A summary of the documents in that file also was made part of the record, pursuant to the agreement of counsel described in the foregoing paragraph. That summary has been reproduced as Attachment G to this brief.

In note 11 on p. 17, petitioners assert that three manufacturers of antilock equipment had not reported a single safety-related defect, and that this establishes that anti-

lock devices can be successfully made. There are seven manufacturers of antilock devices. All seven antilock manufacturers have experienced multiple problems as shown by document BA-33 in Appendix F to this brief.

At p. 16, note 9, petitioners assert: "the fact that *some* manufacturers *claim* to have experienced difficulties with antilock equipment cannot by itself mean that the standard is impractical." (Emphasis supplied.) The materials already referenced make it clear that the problems were not confined to "some" manufacturers. Further, the evidence was more than just claims of manufacturers. Appendix H to this brief is a complete reproduction of NHTSA Doc. No. 75-16-No2-042-P-8, the findings of the California Highway Patrol's commercial vehicle section. It lists 24 accidents and "extensive documented operational deficiencies that have occurred across the spectrum of vehicles placed into service under 121 requirements." (App. H, pp. 4 and 10.)

Petitioners argue that NHTSA has no duty to conduct research or testing, has no duty to consider the results of research or testing, and that the court erred in holding to the contrary. (Pet., pp. 14, 17 and 19-22.) The Safety Act, however, provides:

> The Secretary *shall* conduct research, testing, development, and training necessary to carry out the purposes of this subchapter, including, but not limited to—
>
> (2) procuring (by negotiation or otherwise) experimental and other motor vehicles or motor vehicle equipment for research and testing purposes;

15 U.S.C. § 1395(a) (emphasis supplied).

> In prescribing standards under this section, the Secretary *shall*—
>
> (1) consider relevant available motor vehicle

> safety data, including the results of research, development, testing and evaluation activities conducted pursuant to this chapter;

15 U.S.C. 1392(f) (emphasis supplied).

In an agreed "Order Settling the Record and the Issues" prepared by counsel for all parties and entered by the court of appeals on April 29, 1976, NHTSA made the following admissions:

> 11. Except for testing described in the Murphy Report, NHTSA did not conduct any reliability testing of vehicles with SS-121 components prior to the effective dates of SS-121.
>
> 33. NHTSA has not yet begun testing of vehicles for compliance with SS-121.

The "Murphy Report" just referred to, NHTSA Doc. DOT HS-800 492, concerns tests conducted in 1969 and 1970. Vehicles with "advanced" systems including more effective brakes and antilock exhibited stability problems even at moderate deceleration levels and the report warned against instituting an inclusive standard until antilock with a high degree of reliability was available. (Murphy Report, Vol. 1, pp. 60, 164, 167, and 248-250.) Four years later, at NHTSA's October 1975 hearing, Mr. Murphy, the principal author testified:

> The Administration had adequate warning of the problems we are currently experiencing in the field with systems mandated by FMVSS-121. In the final report of the DOT sponsored study, the problems with overly effective brakes and antilock system reliability were clearly delineated. . . . The problems associated with over-effective brakes and unreliable antilock systems have been brought to the attention of the Administration time and time again over the past five years.

(Doc. No. 75-16-No2-042 at TR 296-298.)

CONCLUSION

The essence of the Petition is that the court of appeals did not accept at face value petitioners' self-serving, unsupported Federal Register pronouncements concerning the Standard, but instead conducted "a careful review of the extensive record," (App. A. p. 18a) as required by *Overton Park*. Petitioners would have this Court re-review this record. It is respectfully submitted that this is not the function of this Court.

It is important to note that the court of appeals specifically confirmed NHTSA's authority to promulgate new stopping distance requirements to replace the invalidated 60 mph requirement. (App. A, p. 26a.) Unfortunately, all rulemaking pertaining to the Standard has been suspended while NHTSA pursues its remedy in this Court. Granting the Petition will further delay any rectification of the Standard, and overturning the court of appeals will perpetuate the highway hazard found by that court. The Petition should be denied.

Respectfully submitted,

THOMAS W. HUBER of
HELSELL, FETTERMAN, MARTIN, TODD & HOKANSON
Attorneys for
PACCAR INC

NELSON J. COONEY
General Counsel
AMERICAN TRUCKING ASSOCIATIONS, INC.

APPENDIX E
COURT OF APPEALS CITATIONS TO THE RECORD

The following quotations are taken from the citations to the record by the court of appeals in its April 17, 1978 opinion. The page references for that opinion are those used in Appendix A of the Petition for Writ of Certiorari.

Page 10a, n. 20 "Complaints" received by NHTSA "that antilock devices were unreliable, and rendered vehicles dangerously unsafe when combined with new, more effective brakes."

— "[W]e believe that a most serious safety problem may be created by present state-of-the-art brake systems designed to meet MVSS-121. This is due to the possibility of complete loss of vehicle control resulting from a failure of the wheel lock control system." Letter from General Motors Corp., *supra* note 16; Nov. 28, 1973 (Doc. No. 70-17-No4-001)

— "The kinds of problems Ford has uncovered by testing and engineering evaluation in the past year are both complex and fundamental. The brake torques needed to satisfy the 245 ft. stopping distance prescribed by the Standard generate a huge weight transfer from rear to front on heavy duty vehicles. The loads on the front spring suspension which result from the weight transfer and the high front brake torques introduce new design problems for which we have found no solutions. The effect of these new problems on many vehicles is to cause extreme vehicle instability during high decelerations.

The rates of deceleration needed to comply with the stopping distances prescribed in FMVSS 121 have stretched the overall braking capability of these large vehicles to the limits imposed by the physical parameters that govern a vehicle's ability to stop. Certain vehicles cannot comply with the prescribed stopping distances.

The problems of handling and stopping distance are further complicated by the present lack of reliability for antilock systems. Malfunction in this system can render a vehicle unstable during fast deceleration because the high torque brakes can and will lock the wheels. As de-

tailed in Attachment IV, one Ford test vehicle recently rolled over due to a rear axle antilock malfunction.

All of the fundamental problems encountered by Ford result from the excessively high brake torques needed to attain the prescribed stopping distances. We believe that these stopping distances may never be practicable for some heavy duty vehicles without major new vehicle designs such as independent front suspensions or similar substantial departures from current practice." Letter from Ford Motor Co. to NHTSA, Apr. 1, 1974 (Doc. No. 74-10-No1-023).

Page 11a, n. 21 "'Finality' did not mean an end to amendments, nor to industry protestations."

— "Our fears arise from ample evidence (1) that the new vehicles built in accord with the Standard will be difficult to maintain, (2) that they will be uncontrollable where the antilock features of the front axle do not function as they are supposed to, and (3) that it is now shown that the unproved devices mandated by the rule are failing. . . ." Letter from ATA to NHTSA (Mar. 25, 1975) (Doc. No. 74-10-No15-004).

Page 11a, n. 22 "NHTSA acknowledged that production variables were affecting performance."

— "General Motors . . . indicated that similar 121 vehicles can register as much as a 20-percent difference in stopping distances as a result of uncontrolled variability in brake component performance. International Harvester, which until recently had supported 5-percent longer stopping distances on an interim basis, now points to certain variables, including brake linings, in requesting long distances on a permanent basis. Diamond Reo reported the same experience. . . ." 40 Fed. Reg. 12,797 (1975).

— "Petitions to reduce Standard No. 121's stopping distance requirements were received from six manufacturers and users of air-braked trucks and from Wagner Electric Corporation. . . . The manufacturers of components and vehicles argue essentially that production and test procedure factors introduce sufficient variability into the performance of their products that large "compliance margins" of overdesign must be built into each

unit to assure 100 percent compliance with the standard's requirements. These petitions assert that, as a result, vehicle designs have reached the maximum limits of brake technology and the brake systems can produce significant lateral instability and related poor handling characteristics. The petitions of users . . . argue that antilock systems, used by most manufacturers to meet the standard, are unreliable and constitute a safety hazard on the steering axle in combination with strong front wheel brakes." 40 Fed. Reg. 24,915 (1975).

Page 12a, n. 23 "The agency conceded that the requirements of the original Standard were difficult to achieve in a mass production situation."

— "[T]his agency has evaluated the submitted data which show variability of various components and concludes that the degree of variability can necessitate more aggressive brake packages than are desirable to achieve the stopping distances contemplated in development of the standard. One undesirable characteristic cited by PACCAR is the side-to-side handling problems which can arise during severe braking associated with any imbalance of the brakes. Ford data demonstrate the point at which tire aligning torque becomes negative and contributes to steering instability under severe braking. Other manufacturers conclude that the variability in brake assembly and other areas forces use of brake packages which approach the maximum in technological feasibility and leaves no room for a 'compliance margin'. In agreement that these problems can arise in some cases, NHTSA proposes an increase in the stopping distance permissible in a stop from 60 mph in the loaded condition on a test surface with a skid number of 75 (with corresponding changes at lower speeds)." 40 Fed. Reg. 24,916 (1975).

Page 13a, n. 24 "Nine months after the Standard went into effect . . . a public hearing was held."

— "The NHTSA has received reports that the new-introduced (sic) braking systems and antilock systems of some manufacturers, have not been operating properly, causing increased maintenance and the possibility of unsafe vehicle braking performance. Eight safety-related defects in the production systems have been reported to

the NHTSA, and recall campaigns are underway at this time."

° ° °

"To ensure that the data upon which the NHTSA relies are complete, the agency considers it imperative to collect all existing information on the operation of the new systems as soon as possible. For these reasons the NHTSA has determined that . . . a public meeting is desirable to discuss the field experience accumulated with the new vehicles." 40 Fed. Reg. 43,050 (1975).

Page 19a, n. 36 "One manufacturer informed NHTSA that it was required to introduce 40,000 new part numbers in its system alone as a result of the standard." Letter from International Harvester Co. to NHTSA (1975) (Doc. 75-16-N02-005).

Page 19a and 20a, n. 37 "As new components . . . were mass produced, and subsequently put together in a unique combination, grave problems developed."

—NHTSA, Listing of Safety Defect Recall Campaigns (1975) (Doc. No. 75-16-N02-010) which lists 11 separate recall campaigns involving brake components, NHTSA identification numbers 75-0012; 75E-025; 75E-027; 75-0029; 75E-029; 75E-030; 75E-031; 75-0046; 75-0050; 75-0051; and 75-0106.

—ATA (American Trucking Asso.) letter to NHTSA, March 29, 1974 (Doc. No. 74-10-N01-014) enclosing an engineering report titled "National Highway Traffic Safety Administration Sponsored Brake Demonstration Held at East Liberty, Ohio on November 7 & 8, 1973." The conclusions:

"1) Big, powerful front brakes with or without anti-lock cause real problems in steering control during high rate stops on split coefficient surfaces.

2) Anti-lock failure on a new tractor pulling an older trailer causes serious trouble in a panic stop. Trouble also occurs when pulling the new trailers under such conditions.

3) A front brake line failure causes trouble either with or without anti-lock but causes trouble in proportion to

the front brake torque output, therefore 121 type tractors are more troubled than the older vehicles.

4-a) Some new tractors could stop both tractor and trailer most satisfactorily with a severed trailer control line, others could not.

4-b) One tractor tested with an open trailer control line drained both tractor reservoirs to a level below 60 PSI and had to be recharged before it could drive off the test pad.

4-c) Of the ten new tractors at the test site, only seven were tested with an open trailer control line. Of these seven tractors, only two appeared to be able to make a trailer spring brake application after such a failure. One of the remaining five, during the ATA portion of the test, demonstrated how a new valve will control this. We are told that one of the vehicles not tested in this mode also has this capability by means of a different plumbing system.

5) Several tractors, submitted in good faith by suppliers could not move from the skid pad after but *one* stop by use of their secondary system.

6) Anti-lock increases panic stopping distances but does provide better control under such conditions.

7) One pre-121 tractor and trailer, typical of those in the supplying fleet gave much shorter stops on wet pavement than any of the new 121 type combinations.

8) A rear brake failure on older tractors increases stopping distances more than such a failure does on the new tractors.

9) Failure of anti-lock on the new trailer does not cause as much trouble as tractor anti-lock failure."

—Letter from NHSTA to Weyerhauser Co., Mar. 8, 1976 (Doc. No. 75-16-N05-067) replying to that company's letter requesting information on EMI (Electric Magnetic Interference). NHTSA stated that "Kelsey-Hayes Corporation and Eton Corporation anti-lock systems have been reported as susceptible to EMI" which can activate the anti-lock system causing a release of air pressure. "Isolated reports of EMI in Rockwell and AC Division (General Motors) anti-lock systems are being investigated by these manufacturers." NHTSA has two research contracts

in progress on this problem, one since July, 1974 and the other since October, 1975. Ford "recently reported that part of its heavy truck line may be susceptible to EMI."

—Testimony of Holly Farms Poultry Indus. at TR 176-178, October 1975 (Doc. No. 75-16-No2-042). "On June 1, 1975, we put into service 67 new trailers equipped with anti-lock systems. . . . we have inspected 26 anti-lock systems using the instructions and procedures outlined by the technical representative of the anti-lock system manufacturer. Of the 26 systems inspected, only three were operative. Of the 26 inspected the following number of components have been repaired or replaced as indicated: wheel sensors, 18 replaced, task valves, 42 replaced, hub caps, 4 replaced, computers, 14 replaced, calm [sic] valves, three replaced, brake chambers, two, shorted wiring harness repaired, one. . . . To date, we have had five drivers report no brakes on the first application on these trailers. We have a lot more reports. The spring brakes went into lock up and emergency due to the failure of the task [sic] valve, on open highways. Four lock downs occurred on the road and 25 occurred on our premises. As of September 18th, we knew of seven additional wheel sensors that needed replacing, also by visual inspection of trailers on our lot, we found nine computers out at this time . . . This does not mean these computers are necessarily defective, but does indicate some failure in the system. . . . We have six new tractors equipped with the anti-skid with similar problems."

—Testimony of Wesco Truck & Trailer Sales at TR 518-19, concerning tests conducted May 2 and 15, 1975, attended by members of the California Highway Patrol commercial section:

"a) several failures of modulator valve and computer;

b) trailers without anti-skid system stopped just as straight and within shorter stopping distance fully loaded on dry surface;

c) intermix of 121 and non-121 trailers resulted in jack knife.

(2) B.F. Goodrich components—we started our program to comply with 121 with B.F. Goodrich components.

a) computers have failed before delivery: 30 percent. Finally necessitating 100 percent replacement of this component;

b) modulator valves failed prior to delivery: 10 percent;

c) ratio relay valves locked up on highway twice, for what reason we haven't been able to figure it out. 100 percent replacement of all units with new valves;

d) sensor drive, emergency recalls: 100 percent;

e) hub caps will not hold oil inside hub: 100 percent. B.F. Goodrich has not given us a solution to this as of this date;

f) hose assembly failures upon installation: 20 percent;

g) wire connector failures: 10 percent;

h) fuse box failures: 60 percent. Finally necessitating 100 percent replacement of this component;

i) since 9-1-75 we have had two B.F. Goodrich 1800-2 updated computers fail prior to customer delivery during check out procedure. B.F. Goodrich still has no solution."

Page 20a, n. 39 Problems with antilock warning systems.

—NHTSA Safety Defect Recall Campaigns, see Page 19a and 20a, n. 37, *supra.*

—Letter from Hy-Vee Food Stores to NHTSA, Mar. 1976, Doc. No. 75-16-No2-173), concerning their seven trailers with B.F. Goodrich antilock systems " that malfunction without notice, dumping all the air from the system and leaving the unit with locked brakes. Also we have five trailers with Wagner systems that malfunction without notice."

—Testimony of Leaseway Transp. Corp. at TR 231-33, Oct. 1975 (Doc. No. 75-16-No2-042).

"Our leasing company in Saint Paul, Minnesota took delivery of four International Harvester tractors in July. The recall notice came at about the same time so the tractors were held out of service until details of the recall were known. Upon road testing, one of the tractors with no trailer, company personnel experienced complete lock-up of all brakes at speeds of 10, 15, and 20 miles per hour.

The local IHC branch advised that the antilock is 'not supposed to function under 32 miles per hour.' The warning lights on these units do not indicate a malfunction and the tractors are now in service with under 800 miles on each of them."

—Testimony of Roadway Express at TR 269. "We have had mechanical failures that rendered the antilock inoperative but with no failure light indication. Had this occurred on the steering axle during an emergency stop of a full 121 tractor, it would have been dangerous. Also, we have experienced antilock failure that was only indicated at brake application when it would have been too late. Bear in mind at this point that we can expect fully 46 failures per day as it exists today. After FMVSS Number 121 had been in effect fully ten months on trailers and eight months on tractors, our antilock suppliers are revising computers and redesign of the failsafe modules and attempting to get the hardware to stay in position and the electrical system to function."

—Testimony of Freightliner Corp. at TR 296 concerning difficulties detecting problems during production:

"One possible explanation for not detecting the problems in the first five checks can be gleaned from a review of the fault detection circuitry of commercially available systems. The following listed failures obviously do not constitute total electrical system failure: as stipulated in FMVSS-212 and, thus may not cause actuation of the warning light. In other words, these failures can occur but may not be signalled to the driver. In my prepared testimony here, already submitted, I list these failures and the possible results. The failures go anywhere from excessive air gap to a wobbly rotor to a small amount of runout and failure in the wheel speed sensor, low voltage supplied and poor grounding, failure in the system wiring and computer, and failure in the solenoid valve. The result of these failures can be a possible loss of braking, complete loss of breaking, rapid cycling, and finally reverting to the system without antilock."

Page 20a, n. 41 and 21a, n. 42 "Radio frequency interference was a unanticipated problem, causing the antilock to malfunction and the brakes to fail without warning."

—Rockwell International Corp. testimony, TR 150 Oct. 1975 (Doc. No. 75-16-No2-042).

"The final point I wish to mention is the much publicized radio frequency interference. Radio transmissions can have an effect on the operations of a computer. Although we have not completed our investigation of RFI phenomena, the potential exists for reduction in brake retardation force, but the degree of this has yet to be determined."

—Testimony of General Motors Corp at TR 361.

"In some cases, the operation of the radio has influenced the operation of the anti-lock system. Ths phenomenon is technically known as electromagnetic interference, EMI, but is more commonly referred to as radio frequency interference, RFI. General Motors pre-production field testing, involving hundreds of anti-lock axle systems on many vehicles throughout the country, was free for any incidents wherein RFI was reported. As indicated by field reports since 121 became effective, the absence of RFI during General Motors pre-production field test program was not an accurate indication of what might be truly expected when greater numbers of complete FMVSS 121 systems are used in the field."

—Letter from NHTSA to Weyerhaeuser Co., *supra*, page 20a, n. 37, *supra*.

—Letter from NHTSA to Congressman Shuster, Sept. 17, 1975 (Doc. No. 75-16-No2-032).

"The NHTSA has not established a Review Board to investigate brake failure problems, but agency staff are carefully monitoring all reported instances of 121 brake system malfunctioning. To be sure, the number of such reports is substantial, and system manufacturers have discovered several unforeseen defects which require correction."

—Testimony of Kelsey-Hayes Co. at TR 391 (Doc. No. 75-16-No2-042).

"The second recall pertains to radio frequency interference, commony known as RFI. This recall, and the problem from which it arose, applies only to one of the

three systems we supply. Since there has been a substantial amount of publicity about RFI, much of which is inaccurate, we feel that it is appropriate to explain the facts involved. The facts are that a number of skid control malfunctions, including temporary release of the brakes, can occur when the skid control computer of this system is in close proximity to a relatively high powered radio transmitter broadcasting in a narrow range of radio frequencies. . . ."

—Testimony of California Highway Patrol at TR 466. See appendix H to this brief, infra.

Page 21a, n. 43 and 44 "When the antilock system failed, the high torque front brakes, in the opinion of the industry, created a serious safety problem. Among the problems encountered were lateral instability, jackknifing, wheel lockup, and 'pulling' to one side."

—Ford letter, *supra,* notes 16.

"When an antilock system fails, the problems of vehicle instability are substantially increased. Drivers quickly adjust to the performance of an antilock system and will rely on the system's capability to modulate automatically the brakes. A driver who is accustomed to the antilock system cannot, in our opinion, change his behavior fast enough to prevent wheel lockup during an emergency stop if the antilock fails to operate. When this happens, the result can be loss of steering control and vehicle instability. Under this circumstance, rollover would not be an unlikely consequence." (pg. 4)

—Letter from General Motors Corp. to NHTSA, Apr. 1, 1974, (Doc. 74-10-No1-26)

"General Motors has previously stated its concern (USG 985, November 7 and 28, 1973) over the potential serious effects on highway safety (loss of vehicle control and potential rollover) that could result from placing a wheel lock control system into service that did not have proven reliability. In this docket, the NHTSA has stated that drivers will not become reliant upon such systems and that they believe a failure will have a limited effect on vehicle control. General Motors believes that once a performance level for a vehicle has been established, operators will become sufficiently accustomed to that level and that any significant change could have an adverse effect upon the operator's ability to control the vehicle. Such a sudden change in performance would be critical if the level of braking performance is suddenly increased or decreased. Further, General Motors believes that a failure on a single axle wheel lock control system of a vehicle equipped to meet MVSS 121 can have a significant effect on vehicle control. A condition permitting locked wheels on a front axle can result in loss of steering capability and locked rear wheels create directional instability." (pg. 4-5)

—Letter from General Motors Corp. *supra* n. 16 reporting on three test track accidents in which trucks with Safety Standard 121 equipment overturned during braking maneuvers. (Section 3 of letter, pp. 1, 3, 9, and 10.)

"In the MVSS 121 Petition filed November 8, 1973, General Motors cited two severe accidents in which trucks were inadvertently overturned while testing MVSS 121 brake systems. Since the petition was filed, a third truck has overturned, this time from a sudden and complete application of the spring brakes to the rear axles of a tractor without its trailer.

We have studied these accidents carefully to understand the fundamental causal factors involved. We felt we must know whether or not these accidents were related to some unusual circumstances presented by the experimental test conditions, or if these new brake systems could produce similar accidents on the highway in normal customer driving. Here are the results of our analysis.

All three accidents had these common ingredients:

1. The drivers were experienced in running truck brake tests, and were familiar with the vehicle.
2. The rear brakes of the vehicle were applied, fully, locking the rear wheels.
3. The vehicle turned slightly out of its straight line path and then overturned." (p. 1)

"We must conclude, therefore, that since driver reactions in these situations are unpredictable, that possible failure of the rear wheel lock control presents a substantial safety

hazard which may or may not be controllable by the driver. If uncontrolled, however, the consequences of lockup may be very drastic, including vehicle rollover." (p. 10)

—Testimony of Wilson Freight Co. at TR 211, Oct. 1975, (Doc. No. 75-16-No2-042).

"The very short development period has put into service skid control systems composed of components which have not been thoroughly field tested. This can be verified by checking the number of recall campaigns in this area. Virtually 100 percent of the skid control systems now in service have had at least one recall campaign.

It has been said of 121 that it can help you but can not hurt you. Meaning that if the skid control portion fails you still have good sound brakes, that is not true. . . .

New brake standard tractors are equipped with large steering axle brakes. These are approximately 70 percent of the brakes on a non-steerable axle. These brakes are so severe that heavier axles, axle mountings, and steering linkages had to be developed to keep these axles from being literally torn off the vehicle during brake application. With brakes of this magnitude, during a panic stop, with inoperative skid control the driver will have absolutely no control over the vehicle or combination of vehicles."

—Testimony of Leaseway Transp. Corp at TR 234.

"Basically the safety hazards we see down the road all revert back to the use of high torque brake lining, particularly on steering axles. As long as this high torque capability is under the control of an efficient antilock device, no problems will occur. This unfortunately, however, has not been the case. The antilock systems are not sufficiently reliable to be of safety benefit at this time. While they all revert back to 'pre-121' braking in the event of antilock failure, this too is a dangerous situation as long as the brakes are lined with the aggressive material necessary to comply with the standard. Experience has shown this causes wheel lockup immediately."

—Testimony of Queens Transit Corp. TR 510.

"One of the assurances given to us when 121 was made

final was that the beautiful part about this system was if you lost the anti-skid or anti-lock device, it would revert to normal braking. What a great piece of fiction this turned out to be. It not only didn't revert to normal braking, but it reverted to no braking."

—NHTSA, Internal Progress Reports B-7 (1976) (Doc. No. 75-16-No2-183) discussing NHTSA's Safety Research Laboratory's inability to ascertain why a Mack tractor had steering pull during braking.

"*Mason-Dixon Lines Tractor-Trailer Braking Problem Evaluation*—The Mack tractor that SRL has been evaluating for steering pull during braking was taken to the Mack dealer in Baltimore during March for installation of modifications developed by Mack to eliminate the problem. . . .

The tractor was then returned to Aberdeen Proving Ground for tests to evaluate the effectiveness of the modification. The vehicle was tested as-received . . . and a left pull of the same magnitude experienced before the modification was evident. . . .

This summary supports the same conclusion that was reached before the tractor brake system modification; i.e., the left front brake is inherently more effective than the right not because of differences in linings or drums but because of other components within the brake assembly. We had hoped that the replacement of the S-cams which were a suspected cause of the difference in brake effectiveness would solve the problem. They apparently did not."

Page 21a and 22a, n. 45-47 Failure of users to advise manufacturers of problems and the results of random spot checks.

—n. 45. Testimony of Consolidated Freightway representatives concerning 65% malfunction rate of antilock devices. TR 17-24, Oct. 1975 (Doc. No. 75-16-No2-042).

"We have, however, put in service in April, May, and June of this year 256 45 foot semi-trailers in our U. S. motor carrier operations. While these trailers have been used for only seven months, I had our maintenance people make a random check of 121 equipped trailers through Tuesday, October 7th, and report all significant informa-

tion on the 121 brake systems. The results of this one day survey are written in an appendix to these remarks, but in summary out of the 37 121 equipped trailers we inspected we found 24, or nearly 65 per cent, with nonfunctioning antilock systems." (p. 17)

"I am aware that NHTSA characteristically will say that most of the things found wrong with our trailers in this inspection were small items and easily correctable. This is true but none of the trailers had been in service over 180 days and most had been in service no more than 90 days. Burned out fuses and defective wiring make the system just as inoperable as major problems. Furthermore, the manufacturer has now advised us that the antilock system problem is in the transducer and we are going to mount a retrofit program on all 256 trailers." (p. 18-19)

—n. 46. Report of 59% nonoperative rate for antilock systems, in letter from General Motors Corp. Apr. 1, 1974, *supra* n. 43, at pp. 8-9.

"General Motors has endeavored to closely control and follow its wheel lock control field test installations and correct any malfunction. The operators of such fleets have been requested to *immediately* notify General Motors by telephone of any wheel lock control system failures and have been assured that service of such systems would be available within 24 hours. In addition, General Motors has conducted periodic inspections of these field installations. Nevertheless, a recent periodic survey revealed 59% of the vehicles inspected in 4 separate test fleets had inoperative wheel lock control systems, yet these trucks remained in use. . . none of these failures had been reported by the drivers or owners to General Motors despite our specific request for immediate notification of any malfunction."

—n. 47. Letter from Consolidated Freightways to the Secretary of Transportation, Apr. 6, 1976, (NHTSA Reliability File, Doc. 75-16-No2-010), concerning 48% failure rate.

"I sent you a copy of my Mailgram . . . regarding a check made at Cincinnati during the week of March 22nd, of trailers equipped with antilock devices mandated by

FMVSS-121. . . . You will note that 48% of the trailers checked were found to have the antilock devices inoperative."

Page 22a, n. 48 Testimony to NHTSA concerning failure of certified antilock systems at or shortly after delivery.

—Letter from A-P-A Transport Corp. in NHTSA reliability file, Feb. 5, 1976 (Doc. 76-16-No2-010).

"In June 1975, we took delivery on 10 R Model Macks equipped with Eaton antiskid controllers. . . .
Our experience—

- The controller that is supposed to detect problems and give a warning light was inoperative. Without this detection device, problems in the systems could go unnoticed.
- In service, several units reported that warning lights for the antiskid system were coming on and staying on for no apparent reason.

In May of 1975 we purchased seven new Gindy Trailers. The trailers were put into service during the early part of June. In July, we received a letter from Gindy advising of a defect in the relay valves which would cause a slow air leak that would eventually lock the parking brakes on the trailers. Just one week after the first letter, another one came pointing out component failure in the drive unit in the in-axle wheel speed sensor. The manufacturer recommended that the units be removed from service while repairs were effected. Total time for repairs to be accomplished: four weeks."

—Letter from J. P. Silvey Trucking to NHTSA, Oct. 7, 1975, (Doc. No. 75-16-No2-052) concerning purchase of "three sets of trailers on June 10 equipped with the B.F. Goodrich system. On July 7 all fuses were removed as a result of a recall letter. Out of the 9 fuses removed 5 were found to be blown—representing a 55% failure rate in less than 30 days. To date this system has not been made operational."

—Testimony of Leaseway Trans. Corp. at TR 230 (Oct. 1975) (Doc. No. 75-16-No2-042). See page 21a, n. 43 and 44, *supra*.

—Testimony of Roadway Express at TR 276, (Sic. TR 267).

"Roadway and others have learned from sad experience that there is no substitute for field testing. We were testing three of the leading brands of antilock on 20 line haul tractors. . . . the projected cost of maintaining the best of the three antilock systems—three units on the tractor, two units on the trailer—during a six year life of the fleet of 2,395 tractors and 7,697 trailers are, for the Eatons, $1,099,350 for the tractors, $737,988 for the trailers for a total of $1,837,338 for the fleet.

The other two systems were so plagued with repeated failures that they cannot be considered for use in our fleet and consquently no projected costs are presented. . . . we stopped repairing failure in the two systems because of the excessive downtime and expense. The Wagner units were later reactivated based on assured product improvement with relocation of components only to see failures start within 14 days of these alleged improvements. . . . In the meantime, due to the disastrous performance of two of our test systems we expanded to a fourth system, Kelsey-Hayes, on five units approximately three months ago and, in this short time, have had four failures."

APPENDIX F

SUMMARIES OF TESTIMONY CONCERNING PROBLEMS EXPERIENCED

TESTIMONY CONCERNING ANTILOCK DANGERS

Wagner Electric. The main problem is "aggressive braking action and excessive front axle brake torque, primarily on tractors." In support of a request for lengthening of minimum stopping distances and significant reductions in steering axle brake torque, "reductions of this magnitude will improve control of the towing vehicle by the driver, will reduce the probability of front end dive, reduce the tendency for front axle roll, and diminish the abnormal steering reactions that may occur because of dive, roll, and excessive torque." (Kourik, M.T. 33 and 36.)

International Brotherhood of Teamsters. In discussing elimination of the antilock requirement there would be more concern "with the antilock system off and the more aggressive brake system there because you would get locked up and then you would have a unit out of control....it would be a big mistake to propose to take off the antilock system and leave the aggressive brakes on." (Durham, M.T. 57.)

Holly Farms Poultry Industries. The addition of front wheel brakes makes these vehicles dangerous and unpredictable. (Whittington, M.T. 183.)

United Parcel Service. Information regarding high torque front brakes "overwhelmingly justifies the fear of the loss of

BA30

steering control and vehicle stability upon failure of front axle antilock." (Lewis, M.T. 189.)

Wilson Freight Company. "It has been said of 121 that it can help you but cannot hurt you. Meaning that if the skid control portion fails you still have good, sound brakes, this is not true....new brake standard tractors are equipped with large steering axle brakes....these brakes are so severe that heavier axles, axle mountings, and steering linkages had to be developed to keep these axles from being literally torn off the vehicle during brake application. With brakes of this magnitude, during a panic stop, with inoperative skid control the driver will have absolutely no control over the vehicle or combination of vehicles. Another factor that must be considered concerning the driver is driver dependence on big strong brakes with skid control. Any deviation from what the driver expects could result in trouble." (Strout, M.T. 211-212.)

Leaseway Transportation Corporation. "The safety hazards we see down the road all revert back to the use of high torque brake lining, particularly on steering axles. As long as this high torque capability is under the control of an efficient antilock device, no problems will occur. This unfortunately, however, has not been the case. The antilock systems are not sufficiently reliable to be of safety benefit at this time. While they all revert back to 'pre-121' braking

in the event of antilock failure, this too is a dangerous situation as long as the brakes are lined with the aggressive material necessary to comply with the standard. Experience has shown this causes wheel lockup immediately." (Speere, M.T. 233-234.)

California State Highway Patrol. Reported on two test demonstrations. The first was at International Harvester's Indiana plant. "There were three tests of bus and truck chassis -- one antilock system failed, tires locked, there were flat spots on tires, warning lights did not indicate electrical failure. During a high speed 50 m.p.h. test...there was extreme bouncing and jerking of the vehicle. A high speed, 50 m.p.h. stop with the school bus, expelled so much air that the warning lamp and buzzer began to operate because the low air warning device was activated." The second demonstration was by WESCO Truck and Trailer Sales of Woodland, California. "In the demonstration there were instances when the 121 did work. When it was compared with a comparable demonstration by a non-121 equipped tractor and semi-trailer, that the stopping distances were somewhat greater and for the most part not considerably shorter. There were cases when the 121 system failed....on one of these failures... when the computer on one axle or that controlled one axle failed. Unlike what we thought would happen, the normal braking

did not take over. It appeared as though the operation of the brakes on that axle was actually interfered with." (Kynaston, M.T. 465-466.)

Motor Coach Industries. "A loss of drive axle brakes due to an anti-skid malfunction is very critical, especially at a moderate speed." (Derragon, M.T. 92.)

Transport of New Jersey. "At first it was claimed that this anti-lock device was 'failsafe'. Theoretically, if the anti-lock portion of the braking mechanism was not in effect, the brake's normal ability was still present. However, time and circumstances have proven that the anti-lock device on transit vehicles is not 'failsafe' and indeed the device failed, creating at least two hazardous conditions, as follows:
One: For one of several reasons the sensor 'thinks' the bus is skidding, usually at speeds between 5 and 15 m.p.h. and disengages the ability of the bus to brake. Then when the driver applies the normal brake pressure, he suddenly realizes that no braking action is occurring and he instantly increases the application of pressure to the brake pedal. During this period of time the bus has in many instances rolled a sufficient distance to either impact another vehicle or cause a 'near-miss'.
Two: During this short period of time when the driver realizes that his initial braking action is having no effect, and he applies more brake pressure, the sensing device realizes that the bus is 'not skidding' and permits the braking effort to take effect.

"With a heavy brake pressure, the new softer linings 'grab' and a very severe braking action results which frequently causes standing passengers to be thrown to the floor or seated passengers thrown out of their seats." (Gilhooley, M.T. 125-126.)

Briggs Transportation Co. With regard to drivers' reports that they feel that when the brakes are operating properly everything is fine, "but when the anti-skid device does not work and they apply the brakes, that the brakes are too severe than what they are used to operating." (Johnston, M.T. 202.)

Mass Transit Administration, Maryland Department of Transportation. "One of the assurances given to us when 121 was made final was that the beautiful part about this system was if you lost the anti-skid or anti-lock device, it would revert to normal braking. What a great piece of fiction this turned out to be. It not only didn't revert to normal braking, but it reverted to no braking....this lack of a 'failsafe' backup, in my opinion, is a very, very dangerous precedent to be established in vehicle safety regulations." (Giuliani, M.T. 509-510.)

SUMMARY OF TESTIMONY
CONCERNING ANTILOCK PROBLEMS
— BY ANTILOCK MANUFACTURER

(a) Kelsey-Hayes. Greyhound made a test installation in November, 1970. To keep it in service required "constant maintenance and replacement of the components required." These problems were reported to NHTSA in face to face meetings in July, 1973 and April, 1974. (Steber M.T. 66-68.) Leaseway Transportation reported the only solution to date for the radio frequency interference on International Harvester vehicles was dashboard decal warning to the driver not to transmit while braking. Four tractors were received in St. Paul in July but were held out of service until details of the radio frequency interference problem were known. Upon road testing, one of the tractors experienced complete lockup of all brakes at speeds of ten, fifteen and twenty miles per hour. The Vineland Branch has fifteen trailers, eight of which dump all air when they are uncoupled. (Speere, M.T. 229-231.) Roadway express installed five units three months ago and has four failures to date. (Dawson, M.T. 267.) In a test demonstration by International Harvester representatives of the California State Highway Patrol noted that in three tests one antilock system failed, and in another high-speed stop so much air was expelled that the low air warning operated. (Kynaston, M.T. 465.)

(b) B. F. Goodrich. This company has had three defect recall campaigns. On September 9, 1975, its personnel met with NHTSA officials and reported that the first defect campaign involved 14,700 computers with the failure rate of approximately 20%; the second involved a sensor drive problem which required replacement of 52,082 components; the third involved a ratio relay valve which caused the spring brakes to come on when not called for, the recall involving 58,000 units. (NHTSA Document 75-16-NO2-023.) In a meeting on September 10, 1975, Mack Trucks reported to NHTSA that there had been 37 field problems with B. F. Goodrich antilock devices. (NHTSA Document 75-16-NO2-024.) Based on the number of trucks involved, this would be a failure rate of 4.8% for six months, or 9.6% a year. Wayne Daniel Truck, Inc. reported that of the five trailers it received with B. F. Goodrich components, only one was still functioning by the time the trailer reached the truck terminal from the factory, a distance of only 250 miles. Before this one traveled another 250 miles, its electronic control system failed. (Daniel

BA33

M.T. 276.) A report submitted by Don Tripp Trucking involved four trailers described as the most unfit piece of equipment seen in thirty years. There were continuous problems of air loss, brakes locking and brakes surging. They had not had one complete week with any one trailer where it all worked properly. (Don Tripp, M.T. 281.) Wesco Truck and Trailer Sales reported their experience with B. F. Goodrich antilock was that 30% of the computers and 10% of the modulator valves were defective on delivery. They also had problems with ratio relay valves locking up on the highway, emergency recalls of sensor drives, hubcaps that would not hold oil, a 20% failure rate on hose assemblies, a 10% failure rate on wire connectors, and a 6% failure rate for fuse boxes. (Sambucetti, M.T. 518-519.)

(c) Rockwell. This company has had two defect recall campaigns. Consolidated Freightways has purchased 256 SS-121 equipped semitrailers since April, 1975. A random check was made, ending October 7, and of the 37 trailers checked, 24 - or nearly 65% had nonfunctioning antilock systems. (White, M.T. 17-24.) Greyhound installed a Rockwell antilock on a test unit in December, 1972, two additional installations were made in November, 1974 and one in December, 1974. These test buses have remained in service only with constant maintenance and replacement of components. (Steber, M.T. 66-67.) A Rockwell representative testified that its problems are "excess sensor-to-rotor gap, computer failures, loose connections, radio frequency interference, and lack of understanding of system operation and maintenance." (Flannery, M.T. 145-146.) Garrett Freightlines has 454 trailers with Rockwell antilock, and the computers have had to be replaced on all of them. (Garrett statement submitted to public meeting, M.T. 281.) General Motors uses Rockwell antilock on its bus coaches. On a number the axles were assembled with improper sensor-to-rotor gap which could result in an antilock computer indicating that a wheel lockup condition existed, resulting in a reduction in brake retarding force. (Martin, M.T. 364.)

(d) Berg Manufacturing Company. In July, 1973 and April, 1974 Greyhound reported to NHTSA the continuing problems it was experiencing with all the antilock devices it was testing, including a Berg device installed in March, 1972. (Steber, M.T. 66-68.) Holly Poultry Farms has Berg and B. F. Goodrich antilock devices in use. On June 1, 1975, 67 new trailers were put into service and a recent inspection of 26 showed that only three were operative. Defective parts included wheel sensors, valves, hubcaps, computers, brake

chambers and a shorted wiring harness. Five drivers reported no brakes on first application. On open highways the spring brakes go into lockup and emergency due to valve failure. Four lockdowns occurred on the road. Six new tractors are in use. The first one delivered had its computer warning light on, which took two days to correct. One tractor failed in California and they had to block the air off the front axle to bring the tractor back. On the second tractor a slight application of the brakes resulted in the brakes failing to release. (Whittington, M.T. 176-178, 184.) Kroblin has reported an accident because of a failed Berg antilock; there was an apparent malfunction of the relay valve on the trailer rear axle resulting in no braking action by that axle, causing a semitrailer jackknife. (Barton, M.T. 206.)

(e) Eaton. In a September meeting with NHTSA officials, Mack Trucks reported 20 field failures with Eaton components. (NHTSA Document 75-16-NO2-024.) Based on the number of trucks in field use this would be a failure rate of .87% for six months or 1.7% per year. Leaseways Canton Tank Carrier has twelve Mack tractors with under 2,200 miles on each, and have had three computer failures and five electrical failures. In Chicago several units were delivered with nonfunctioning antilock systems. (Speere, M.T. 232.) O'Boyle Tank Lines put sixty new tractors into operation on April 1. Problems have included changes of four axle controls, two wheel sensors, and one electrical solenoid. Their problems include loose ground connections and terminal wires, plug wires which have pulled apart, tightening of slack adjusters causing brake hangup, and low voltage. Antilock warning lights are activated by hitting a rail at a railroad crossing or by hitting a chuckhole. (Sitler, M.T. 262-264.) Arkansas-Best Freight System submitted a statement at the meeting concerning experience with 175 Fords. Based on a three-months failure rate, it is possible they will have a 100% failure rate in fifteen months. The statement contains a two-page list of parts which had to be repaired or replaced, totaling thirty-six failures up to September 3, 1975. (Arkansas-Best, M.T. 281.)

(f) General Motors. At a meeting on September 3, 1975, General Motors reported to NHTSA that they had very little data on field experience. (Document NO. 75-16-NO2-026.) Leaseway Transportation's Cleveland subsidiary is operating five GMC trucks with AC systems, two of which have had to go back for electrical problems, one of them on four occasions. Its New Jersey branch has two vehicles, both with electrical problems. One was due to poor wiring and the other is waiting for GMC to track down the problem. (Speere, M.T. 230-231.) Gordons

Transports, Inc. for test purposes installed antilock on ten trucks, five with Wagner systems, and five with GM's AC system. During the testing, there was continuous repair and upgrading by the manufacturer. The final upgrading of the systems occurred in January, 1975 and immediately following the installation they had troubles with the electrical cord and the connectors at the "Black Box." These malfunctions are still being experienced. (Statement of Gordons Transports, M.T. 281.)

(g) Wagner Electric. Gordons Transports report re Wagner is set forth in the preceding paragraph. Blackhills Oil Marketers, Inc. in a memorandum submitted to the meeting reported two units had been in service for six weeks, and both failed. The first unit was returned to the dealer twice a day for three consecutive days; it would operate properly in the shop, and then fail again. Finally, on complete disassembly it was found that the sensor in one wheel hub was loose. The unit was put back into service only to fail before completing the first trip. The second unit failed in the same manner, was repaired, and failed on its first trip. (M.T. 281.) Leaseways Baltimore truck leasing operation had had six trailers in operation for two months and has had two wheelfires caused by dragging brakes. Its Texas subsidiary has two trailers, both of which have a habit of continuous cycling of the antilock system while in traffic, which continues until the trailer's air tanks are exhausted and the compressor can no longer keep up. (Speere, M.T. 231-232.) Roadway Express tested Eaton, Kelsey-Hayes, and Wagner antilock systems on twenty tractors. The Kelsey-Hayes and Wagner systems were so plagued with repeated failures that they could not be considered for use. The Wagner units later were reactivated based on assured product improvement only to see failures begin again within fourteen days. (Dawson, M.T. 267.) About 65% of Freightliner's vehicles use Wagner antilocks, about 30% use Rockwell, and the remainder have Kelsey-Hayes. As of the time of the October, 1975 meeting, Freightliner had only 460 trucks with warranty registration. 43 had experienced electrical problems or a 9.4% failure rate. The average in-service time for these vehicles is only 1.6 months, an average of 13,183 miles per vehicle. 131 trucks were monitored at two of Freightliner's plants for the period September 23 through October 8, 1975. Only 81 of the units went through assembly without problems. Defective components in the remaining 50 included four computers, two modulating valves, and one warning module. Wiring problems were encountered in sixteen cabs and seven chassis, ten wheel speed sensors had

problems and there were twelve loose or unplugged connectors. Even after continued testing during the assembly, dynamometer testing revealed problems in 18% of the vehicles. (Murphy, M.T. 293-295, 301.)

TESTIMONY CONCERNING SS-121 - THE TRUCK EXPERIENCE

Holly Farms Poultry Industries operates over 1700 vehicles over 26,000,000 road miles per year. On June 1, 1975, it received 67 new trailers equipped with antilock. Recently they inspected 26 systems using the instructions and procedures outlined by the manufacturer and found that 83 parts had to be repaired or replaced and 54 adjustments were needed. Estimated cost $15,000.00 to accomplish this work on all 67 of the trailers, not including out of service time. Five drivers have reported no brakes on first application. They've experienced spring brake lockup on the open highway, 4 lockdowns on the road and 25 on the premises. On September 18, they found 7 additional wheel censors and 9 additional computers out. They have 6 new tractors. The very first one was delivered with the computer warning light on. It took two days to repair. One tractor experienced a front wheel brake failure of some type in California and they had to block the air off to the front axle to be able to bring the tractor back to the shop. On a second tractor, a slight application of the brakes resulted in a situation where the brakes would not release, which might be a valve or an antiskid problem. (Whittington M.T. 174-179).

Truck driver, Don Bennet, Northwest Agricultural Cooperative Association, Ontario, Oregon. Eleven of its 50 trucks have 121 components. These have experienced 2 computer failures in 3,000 miles. When it fails the front wheels slide which is a suicidal condition. He has had 20 years truck operation without an accident but has had 2 close calls in the last three weeks due to brake grab pulling the truck into another lane. He has experienced lockup at 20 miles per hour in snow. The previous Sunday night in Omaha, Nebraska, his partner, with 21 years of driving experience without an accident, had one. He could not say for sure that this brake would have prevented the accident, but with the old type brake they would have stopped a lot faster than they did. (Bennet M.T. 185-186).

United Parcel Service. The greatest flaw they see in SS-121 is that it is aimed at the manufacturers with no regard for user problems. They've experienced compatibility problems between pre and post 121 equipment when operated in double and triple combinations. When descending long mountain grades with continuous or intermittent low effort braking, the more aggressive 121 equipped trailer or dolley performs more work than the pre-121 equipment, resulting in overheated or burnt out brakes. They've been experiencing fast lining wear, drum heat cracks, and burned linings. (Lewis M.T. 186-190).

Kroblin Transportation Systems has had an accident caused by a SS-121 failure. The trailer was equipped with a Berg system. At approximately 6,501 miles, the tractor semi-trailer jackknifed during a successful attempt to avoid a collision with an automobile which drove out on to the roadway and stopped directly across both lanes of traffic in which the unit was operating. The cause of the jackknife apparently was malfunction of the relay valve on the rear axle of the trailer resulting in no braking action by that axle. The driver had noted no problems previously. (Barton M.T. 206-207).

Wilson Motor Freight operates almost 5,000 heavy-duty vehicles in more than 25 states. Virtually every system has had to be modified in recent weeks and every modification introduces new circumstances which may be unsafe and unreliable. (Strout M.T. 207-208).

Johnson Motor Lines as yet has no complete SS-121 equipment. With those they have, they have experienced 8 road failures and 6 shop failures because of relay valves; 8 road failures and 10 shop failures because of tractor protection valve failures; and 4 road failures because of trable valves. (Hampton M.T. 215-216).

Leaseway Transportation Corporation is a holding company with 170 subsidiaries engaged in all forms of motor transportation and distribution with about 55,000 pieces of equipment and about 31,000 airbrake units. They purchased approximately 7,400 air braked vehicles in 1974. To date in 1975 they have purchased only 3,100 units, and only 250 with SS-121 components. The remainder were purchased from inventory. The reason for the sharp decline in their purchases is the increased cost of the total vehicle and the unknown reliability of the antilock system. They have a continual high maintainance expense with SS-121 vehicles. Prior to the effective date of the standard, they conducted a test program over a one-year period involving approximately 100 vehicles using all 7 of the available antilock systems. Research disclosed unreliable operation for all of them which caused unsatisfactory maintainance and safety performance. (Speece M.T. 226-229, 237).

O'Boyle Tank Lines put 60 new tractors with Eaton system components into service on April 1, 1975. They had have to change 4 axle controllers, 2 wheel sensors, and 1 electric solenoid. Other problems include loose ground connections, loose terminal wires, plug wires that pull apart, wheels that spin, antilock warning lights that come on, and problems with low voltage. (Sitler M.T. 262-263).

Roadway Express has 300 terminals in 33 states and operates 2,395 tractors and 7,697 trailers. Because the many petitions filed with NHTSA indicated they could anticipate higher purchase prices, increased maintainance costs, component shortages and inadequate testing of SS-121 vehicles and components, they initiated an accelerated equipment replacement program in 1973 and 1974 and thus do not have a fully equipped SS-121 vehicle. They have field tested three of the leading antilock brands, Eaton, Wagner and Kelsey-Hayes, and have had repeated problems with all of them. The best, the Eaton system, has an average failure rate of 53,300 miles, which is not comparable to failure rates experienced on other truck components. (See Roadway Express statement, p. 4, which indicates that the least reliable of other truck components is the alternator, which fails on an average of every 260,000 miles). They've experienced antilock failures when the warning light came on, but also failures when the only indication came on brake application, when it was too late. Based on the failure rate they have experienced, if their entire system was equipped with SS-121 vehicles, they could expect 46 failures per day. After ten months, antilock suppliers still are revising and redesigning failsafe modules. (Dawson M.T. 265-270).

F.S. Services, Inc. is a regional farm cooperative with headquarters in Illinois. Its transportation division operates 182 road tractors and 432 trailers. In April, 1975, they put 34 trailers with SS-121 brakes into operation. Shortly thereafter 18 of them were recalled by the manufacturer because of disablement of the system. One trailer was received with sensor rings improperly installed. To update the fleet in the next five years with these brakes will cost approximately $472,000.00. (Davis M.T. 450-452).

Wesco Truck and Trailer Sales performed tests on May 2 and 15, 1975, with representatives of the California Highway Patrol present. During panic stops there were several failures of the modulater valve and computer. Trailers without the antiskid systems stopped just as straight within shorter stopping distances fully loaded on a dry surface. Intermix of 121 and non-121 trailers resulted in jackknife. They started their program to comply with 121 using B. F. Goodrich components and have experienced the following failure rates and problems: 30% of computers and 10% of modulator valves failed prior to delivery; 100% replacement of all ratio relay valves; 100% replacement of sensor drives; 100% of the hubcaps will not hold oil, a problem as to which there has been no solution; 20% of hose assemblies fail on installation; 10% of the wire connectors have failed; 60% of the fuse boxes fail,

finally necessitating 100% replacement. Buyer resistance to the new trailers will cost them an estimated volume loss this year of $600,000.00. For the first nine months of 1974, they manufactured 233 trailers. For the similar period this year, they have manufactured 77. (Sambucetti M.T. 517-519).

Wayne Daniel Truck, Inc. of Mount Vernon, Missouri, has 6 trailers with SS-121 brake systems, five with B. F. Goodrich, and one with Berg. Of the first five, only one had an operating brake system when it was delivered to their truck terminal, only 250 miles away from the factory. By the time this one traveled another 250 miles, its electronic control system failed. It had two malfunctions that dumped all the air and permitted the spring brakes to lockup all wheels, which resulted in a sudden panic stop on the highway. Mr. Wesley Daniel presented the NHTSA Administrator, Dr. Gregory, with a fuse box which had been in operation only during the summer months, and already showed signs of corrosion on the clips and on the wire connectors. (Daniel M.T. 275-279).

Freightliner, a manufacturer, to date has only 460 trucks with warranty registration. Forty-three have experienced electrical problems, a failure rate of 9.4%. The average in-service time between failures is 1.6 months and the average mileage is 13,183 miles. They monitored 131 trucks at two factories during the manufacturing process for the period September 23 through October 8, for SS-121 problems. Only 81 went through assembly without some sort of problem. Defective components on the remaining 50 included 4 computers, 2 modulating valves, 1 computer-valve assembly, and 1 warning module. All had been checked out upon leaving the supplier so the failures had occurred in the interim period. Other problems included 16 cab wiring, 7 chasses wiring, 10 wheel-speed sensors, and 12 connectors. Dynamometer testing after manufacture showed that 18% of the vehicles required antilock adjustment or correction. (Murphy M.T. 293-296).

(A number of statements were presented at the meeting but not read. They are all referred to at M.T. 281. It is assumed that they will be listed in the certified list to be filed with this court December 15, 1975.)

Statement of Gordons Transports, Inc. In 1973 at the request of General Motors, they installed 5 Wagner and 5 General Motors AC systems on 10 new 3-axle tractors. Since then they have experienced continuous repair and upgrading by the manufacturer. The

final upgrading on the systems was done in January 1975, which was the same setup as presently installed. Immediately following the installation, they had trouble with the electrical cord and the connectors at the "black box." They are still experiencing these malfunctions.

Statement of Associated Trucklines. They purchased 15 tractors in 1975, 5 of them single-axle cab-over tractors. Three of these five have experienced brake failure due to the SS-121 air brake system. They've experienced failure in the warning relay so that the driver has no warning in the event of a brake failure.

Statement of Berlington Industries. On October 17, 1975 they conducted stopping tests on a new 3-axle tractor with full SS-121 brakes, with only 22 miles on the odometer. All tests were panic stops on a wet blacktop surface with full brake application, with the air pressure at 110 psi at the beginning of each test. Four stops were made from a speed of 30 miles per hour and in each there was an air pressure reduction from 110 psi to 70 psi. The next series of 4 stops from 45 miles per hour resulted in air pressure reduction from 110 psi to 60 psi. Each of these 45 mph stops resulted in air reduction to a point that the low air warning light and buzzer activated. The air loss is such that there is a danger that the brakes will go into emergency mode before a stop can be achieved, which will effect controllability.

SUMMARY OF DOCUMENTS AND TESTIMONY
RADIO FREQUENCY INTERFERENCE

International Harvester has had a safety defect recall campaign to warn all owners and operators of its trucks that radio transmissions within a certain range while braking can cause malfunction of the antilock which defect "can cause vehicle crash without prior warning." (B.A.24.) To date the only fix to this problem is to affix a warning label on the dashboard of the vehicle. In Omaha, Nebraska, an airport bus has been loosing its brakes as planes come in for a landing. Radio frequency interference (R.F.I.) is the suspected cause. (Schnell M.T. 138.) Antilock manufacturer Rockwell admits that R.F.I. problem exists which has the potential for reduction in brake retardation force, but its investigation is not yet complete. (Flannery M.T. 146-150.) Kelsey-Hayes, whose antilock computer is installed in the International Harvester vehicles, admits that this problem has caused a number of skid control malfunctions, including brake release up to a total of five seconds. (McCuen M.T. 391-392.) General Motors has experienced this problem in field tests and has received eleven reports of such failures. It alerted NHTSA to this problem in early 1974. General Motors has concluded there must be a thorough and exhaustive testing program. (Martin M.T. 361-363.) The Chicago Transit Authority has been having problems while crossing the bridges in Chicago. In the middle of the bridge, for no apparent reason, buses would have no braking. (Schnell M.T. 112-113.) R.F.I. has now been established as the cause. B.A. 36 is an October 28, 1975 report from the Chicago Transit Authority to NHTSA concerning extensive tests carried out by the Authority, General Motors, and Rockwell, which proved that at certain speeds on certain lanes of travel on one of the bridges loss of braking ability occurred due to R.F.I.

APPENDIX G
SUMMARY OF NHTSA'S RELIABILITY FILE

NHTSA RELIABILITY FILE ON FMVSS-121

(27 of the slots in this accordion folder have loosely filed documents. The first slot contains a typed summary sheet for the first twelve slots which assigns a "log" number to all documents in each slot. All documents identified and summarized below are addressed to NHTSA, unless otherwise indicated.)

Log Number	Description
1	Summary Sheet.
2	Documents pertaining to Kelsey Hayes antilock system - loose electrical connection in the computer module (banana pins). Letters from Mack Trucks, International Harvester, and Freightliner. On 1-31-75 Kelsey Hayes reported it had sold 350 of these computer modules and an unknown number had the defect. The result of the defect is that the skid control system would become inoperative without warning or there would be intermittent cycling of the antilock air-control valve (the air would be shut off for up to two seconds).
3	Documents pertaining to defective terminals in the Kelsey Hayes skid control brake wiring harness. A 3-19-75 Fruehauf letter reported the result was intermittent or inoperative antilock without any warning to the driver. On 4-28-75 Kelsey Hayes reported it had shipped 2,577 systems with this potentially dangerous harness.
4	Documents pertaining to 5-5-75 defect notification report concerning Rockwell's antilock system. It had an incorrect backup fuse which might cause the antilock to fail without warning to the driver. It is listed as moderate to small accident potential. It affected about 10% of the computers shipped. Lufkin's letter of

BA31

Log Number	Description
	6-5-75 estimated 55% of 106 of its vehicles were affected. R.O. Products' letter of 6-3-75 reported 26% of its vehicles were affected.
5	Problems in B.F. Goodrich's antilock system. Problem was the rate of potting compound shrinkage which affected the sensor. Loss of antilock might occur without warning. It had a small to moderate accident potential.
6	Documents concerning radio frequency interference (RFI) with antilock. The problems range from illumination of the antilock failure warning light to momentary loss of braking. It is listed as a moderate to significant safety problem. An International Harvester report of 6-11-75 said that RFI causes various malfunctions at the antilock computer. It "can cause vehicle crash if radio transmission is made during brake application."
7	Report of an accident on 4-8-75 of a Silver Eagle Company truck in Des Moines, Washington. Driver reported that its computer brakes did not function properly and the rig overturned.
8	Problems of failures in the ratio relay valve in the B. F. Goodrich antilock system. As the failure occurs the spring brakes (parking brakes) will apply and remain applied until a defective seal is replaced. Reports problems by Utility Trailer Company, Realco Servicing, and by J&L Tanks, Inc.
9	(All documents in this slot were the same as in slot number 4.)
10	Documents reporting problems with the Rockwell antilock system. Summary states, "Incorrect sensor to rotor gap that can lead to a false signal transmission." A 7-10-75 report by

Log Number	Description
	Rockwell indicates lengthened stopping distance and results in a sudden brake application at the end of a stop. The overall effect is an "increase in the potential for a vehicle crash...resulting from a sudden lurch at the end of the stop." A Flexible Company 9-30-75 report states that, "Field experience has indicated that the system is unreliable and in some cases can give a false wheel speed signal indicative of a wheel lockup." Flexible advises disabling the entire units until corrected.
11	Documents pertaining to a problem in the B. F. Goodrich system. Summary describes it as interference between the sensor drive plate and the hub caps, causing a possible loss of brake pressure. A Goodrich 7-11-75 report states that a "loss of brake pressure" could be experienced above a speed of 30 m.p.h. resulting in the loss of braking capacity and vehicle control."
12	A 6-13-75 letter from Smith Transfer Corporation. Two years ago they installed SS-121 equipment on 25 units for test purposes. "Our experience has been completely unsatisfactory, and at times as many as 75% of the units were not operating."
13	Contains two letters describing antilock problems. The first is a Wesco Truck & Trailer Sales Co. 7-25-75 letter reporting that every B. F. Goodrich component used "has failed or been defective." The following items were given failure rates ranging from 10% to 100%. These are computers, modulator valves, sensor drives, hub caps, hoses, wire connectors, and fuse boxes. The second letter is from Great Dane Trailers dated 8-22-75, reporting that of 601 vehicles equipped with B. F. Goodrich components, they

Log Number	Description
	estimate 100% had defects. These included problems in the controller, the Sealco ratio relay valve, and in the sensor drive.
14	A 5-27-75 letter from Central Railroad Company of New Jersey requesting suspension of SS-121 because of field problems experienced.
15	A 9-3-75 telegram from Motor Coach Industries, Inc. reporting an accident in Canada involving a taxi-cab and an SS-121 equipped bus. "Loss of rear brakes due to anti-skid malfunction is the alleged cause." This telegram was followed up by a 9-9-75 letter stating a woman and child were injured in the accident and that the defect can be avoided only by disconnecting the anti-skid device entirely. The system was manufactured by Rockwell.
16	Two letters reporting the experiences of Don Tripp Trucking Co. in Montana. The 8-27-75 letter reports the B. F. Goodrich equipment "is the most unfit piece of equipment I have ever purchased in my thirty years of trucking." The second letter is by a Don Tripp driver, dated 8-16-75, stating that he has 28 years of driving experience, has driven over 3 million miles, and has never experienced the type of problems he is experiencing now.
17	Contains seven newspaper or magazine articles concerning problems in the new braking system. A 9-4-75 Detroit news article is entitled, "Citizen Band Radio Works Truck Brakes." A 9-6-75 Chicago news article is entitled, "Quick Stop Trucks: A Hazard to Safety."
18	Consists of five documents. The first is a 9-18-75 report of a school bus brake failure caused by radio transmission, from the New York Statement Department of Transportation. The second is an 8-27-75 NHTSA report on the problems experienced by Don Tripp Trucking. Three weeks ago a truck had complete air pressure loss. Two weeks after repair, brakes

Log Number	Description
	locked while the vehicle was stopped. The third document is an 8-18-75 report from the Southern California Rapid Transit District that it was impossible to maintain proper sensor clearance on the Rockwell antilock in 100 busses. The fourth is a 7-2-75 report from the Illinois Central Gulf Railroad regarding field test problems experienced in computer modules, electrical wirings and connectors, and modulating valves. The fifth is a 10-2-75 letter from Wayne Daniels Truck, Inc. reporting they have six SS-121 type trailers out of 30 and have had two major malfunctions already.
19	(This slot was empty.)
20	Consists of an 8-19-75 memo. from William DeLapp, Spokane office of the Department of Transportation, to the Director of the Portland office concerning the Don Tripp Truck Co. problems. The trailer antilock malfunction caused brake lock and jackknife. Also reports that information from various sources indicates that citizen band radio transmission and electronic ignition systems on 1975 automobiles can adversely affect SS-121 brakes.
21	9-5-75 letter from Don Bennet (trucker for Northwest Agricultural Cooperative Association, Ontario, Oregon). The Association has 11 SS-121 trucks. They have had to install two new computers within one week. Malfunctions cause wheel lockups. He has driven 20 years without an accident, but in the past three weeks driving SS-121 trucks he has had two close calls due to brake grabbing.
22	10-3-75 NHTSA interoffice memorandums addressed to Steve Sachs; that Holly Farms has reported only 23 out of its 67 121 trailers are operable.

Log Number	Description
23	10-8-75 telegram from Consolidated Freightways. 256 trailers with Rockwell antilock systems were put in service April through July, 1975. A random spot-check last week with 60 trailers revealed the antilock was inoperative.
24	Article in the September, 1975 issue of Southern Motor Cargo magazine entitled, "Panel Presentations, Round Table Discussions Highlight RCCC-Maintenance Committee Meeting" on August 4 in Grand Rapids, Michigan. Edgecomb Steel reported at least one accident due to SS-121 system malfunction. United Parcel Service reported a "multiplicity of problems" and indicated that "factory trained engineers had real problems locating system malfunctions." The article refers to a Bureau of Motor Carrier Safety study based on more than 800 accident investigations and "only seven were related to brake failure and none of these were attributed to brake design." The article also reports that LaVerne Morgan of the United States Postal Service "revealed that his maintenance shop had been instructed to disconnect the system fromall trailers because of operational problems."
25	10-10-75 telegram from Chicago Transit Authority. "CTA has experienced instances of involuntary brake release on new busses received from GM equipped with antilock skid brake system." Because of "imminent danger to the public, CTA is deactivating the antiskid system pending investigation."
26	10-10-75 NHTSA status report on testing of Mason-Dixon Company three axle tractor. Mr. Duggoff of NHTSA was contacted by the Union in June, 1975 about driver concern. He observed that vehicles had a tendency to pull during hard braking. NHTSA leased the truck and trailer and tests showed that it did pull to the left. Tentative conclusion was front brake imbalance.

Log Number	Description
27	(Copy of the 10-8-75 telegram from Consolidated Freightways which is in Log 23.)

APPENDIX H
CALIFORNIA HIGHWAY PATROL PRESENTATION

75-16-N02-042-p-8

"PRESENTATION TO NHTSA PUBLIC MEETING ON FIELD EXPERIENCE WITH TRUCKS, BUSES AND TRAILERS MANUFACTURED IN CONFORMITY WITH FMVSS 121 AIR BRAKE SYSTEMS"

PRESENTED BY CAPTAIN E. E. KYNASTON
OCTOBER 31, 1975

I AM CAPTAIN E. E. KYNASTON, COMMANDER OF THE CALIFORNIA HIGHWAY PATROL'S COMMERCIAL VEHICLE SECTION, SACRAMENTO. ON BEHALF OF COMMISSIONER G. B. CRAIG, I WISH TO EXPRESS THE DEPARTMENT'S APPRECIATION FOR THE OPPORTUNITY TO ADDRESS THE ISSUES IN THIS VERY IMPORTANT MEETING.

BEFORE I RESPOND TO THE SUBJECT OF THIS MEETING, MAY I GIVE RELEVANCE TO MY COMMENTS BY SOME BACKGROUND INFORMATION CONCERNING THE SCOPE OF MY DEPARTMENT'S COMMERCIAL VEHICLE/MOTOR CARRIER OPERATIONS. APPROXIMATELY 2,500,000 TRUCKS AND BUSES, OR 10 PERCENT OF THE NATION'S TOTAL COMMERCIAL VEHICLES, ARE OPERATED ON CALIFORNIA HIGHWAYS. THE CALIFORNIA HIGHWAY PATROL EXERCISES ENFORCEMENT AND REGULATORY RESPONSIBILITY OVER THESE COMMERCIAL VEHICLES ON EVERY FREEWAY AND UNINCORPORATED ROADWAY WITHIN THE STATE OF CALIFORNIA. TO CARRY OUT THIS RESPONSIBILITY, WE HAVE APPROXIMATELY 376 UNIFORMED AND NONUNIFORMED PERSONNEL, 9 INSPECTION FACILITIES AND

BA48

45 PLATFORM SCALES ASSIGNED EXCLUSIVELY TO COMMERCIAL VEHICLE ON AND OFF-HIGHWAY INSPECTION, REGULATION AND ENFORCEMENT. THE EFFORTS OF OUR PERSONNEL RESULT IN THE INSPECTION OF 275,000 VEHICLES ANNUALLY. IN ADDITION, 4,500 NONCOMMERCIAL PATROL OFFICERS ARE USED FOR SOME ADDITIONAL COMMERCIAL ENFORCEMENT ACTIVITIES AS WELL AS THE INVESTIGATION OF APPROXIMATELY 14,000 COMMERCIAL VEHICLE ACCIDENTS YEARLY. INCLUDED WITHIN OUR RESPONSIBILITIES IS THE ADOPTION OF ADMINISTRATIVE REGULATIONS ON AIR BRAKE EQUIPMENT ON THE STATE LEVEL COMPARABLE TO REQUIREMENTS ADOPTED BY NHTSA AT THE NATIONAL LEVEL. CALIFORNIA HIGHWAY PATROL REGULATIONS AND CALIFORNIA VEHICLE CODE LAW ON AIR BRAKE SYSTEMS ARE REPRESENTATIVE OF APPROXIMATELY 50 YEARS OF SAFETY EXPERIENCE IN CALIFORNIA. FOR THE MOST PART, OUR AIR BRAKE REGULATIONS AND LAW HAVE BEEN PREEMPTED FOR 1975 AND LATER VEHICLES BY FMVSS 121.

THESE RESPONSIBILITIES AND ACTIVITIES PROVIDE A BROAD BACKGROUND AND BASE OF INFORMATION WHICH ALLOWS US TO OBJECTIVELY EVALUATE THE EFFECT FMVSS 121 IS HAVING ON FIELD EXPERIENCE OF VEHICLES EQUIPPED WITH 121 SYSTEMS.

CONCERNING THAT EXPERIENCE, LIKE NHTSA, MY DEPARTMENT TOO HAS RECEIVED A LARGE VOLUME OF INFORMATION CONCERNING ALLEGED ACCIDENTS AND INCIDENTS SUPPOSEDLY RESULTING

FROM FMVSS 121. BECAUSE OF THIS, I THOUGHT IT WOULD BE EASY TO OBTAIN ACCIDENT DATA. THAT DID NOT PROVE TO BE THE CASE. OFFICIAL REPORTS OF ACTUAL ACCIDENTS ARE VERY FEW. POSSIBLY THIS IS BECAUSE OUR ACCIDENT REPORTING SYSTEM WAS NOT DESIGNED TO REQUIRE SPECIALIZED EVALUATION AND REPORTING OF ACCIDENTS INVOLVING 1975 FMVSS 121 VEHICLES. ALSO, THE ACTUAL VOLUME OF 121-EQUIPPED VEHICLES OPERATING ON CALIFORNIA HIGHWAYS, PARTICULARLY TRUCKS AND TRAILERS, MAY BE QUITE LOW. REPORTS FROM MANUFACTURING AND TRUCKING INTERESTS INDICATE SALES OF 1975 121 VEHICLES ARE 40 TO 50 PERCENT BELOW 1974. HOWEVER, SALES OF BUSES ARE UP APPROXIMATELY 37 PERCENT. INDUSTRY REPORTS BECAUSE OF HIGH COST, DECREASED LOAD WEIGHT CAPACITY AND OPERATIONAL EXPERIENCE WITH 121 SYSTEMS, TRUCKING OPERATORS ARE NOT PURCHASING NEW VEHICLES IF THEY CAN AVOID DOING SO. ONE TRAILER MANUFACTURER, TITAN TRAILER OF WOODLAND, CALIFORNIA, ADVISES THEIR SALES OF 1975 121-EQUIPPED VEHICLES ARE DOWN 43 PERCENT WHILE THEIR SALES OF USED VEHICLES, INCLUDING THOSE THAT HAVE BEEN WRECKED AND REBUILT, ARE EXTREMELY HIGH. THAT EXPERIENCE APPEARS REPRESENTATIVE OF COMMERCIAL SALES IN CALIFORNIA. I BELIEVE BUS SALES WOULD ALSO BE DOWN IF IT WERE NOT FOR THE ACCUTE SHORTAGE OF BUSES BROUGHT ABOUT BY THE NATIONAL FUEL CRISIS AND THE

INCREASE OF TRANSIT BUS USE BY CONVERSION OF COMMUTERS FROM AUTOMOBILES TO BUSES. THE BUS OPERATORS HAVE BEEN FORCED TO BUY NEW VEHICLES EQUIPPED WITH 121 SYSTEMS AS NO OTHER VEHICLES ARE AVAILABLE IN A RAPIDLY-EXPANDING INDUSTRY. THIS IS PROBABLY WHY THE MAJORITY OF THE INFORMATION I BRING TO YOU TODAY RESULTS FROM THE PASSENGER TRANSPORTATION INDUSTRY.

NOW LET ME SUMMARIZE WHAT MY DEPARTMENT HAS OBSERVED IN CALIFORNIA. THIS INFORMATION WAS PROVIDED BY OUR FIELD PERSONNEL AND FROM INDIVIDUAL COMPANYS OPERATING 121 VEHICLES. UPON CONCLUSION OF MY TALK, I WILL PRESENT YOU A REFERENCE BOOKLET OF MATERIAL GIVING IDENTIFICATION AND APPROXIMATE DATES OF THE INCIDENTS WHICH I AM ABOUT TO RELATE. BECAUSE OF TIME CONSTRAINTS, I WILL SUMMARIZE ONLY A PART OF THE INFORMATION IN THREE CATAGORIES: ACCIDENTS, EQUIPMENT MALFUNCTION INCIDENTS AND 121 DEMONSTRATIONS WITNESSED. I ONLY HAVE INFORMATION ON 24 ACCIDENTS, THEY ARE:

1. SAN DIEGO TRANSIT COMPANY
   IN LESS THAN TWO MONTHS (AUGUST-SEPTEMBER)
   A. 4 ACCIDENTS.
      1 COLLISION WITH A TRUCK - NO INJURIES
      3 INSTANCES OF BRAKES LOCKING - MINOR INJURIES TO PASSENGERS

   B. 32 INCIDENTS REPORTED.
      11 FUSES BLOWN
      21 REPORTS OF MALFUNCTIONING BRAKES

2. AMERICAN PUBLIC TRANSIT AUTHORITY SURVEY
   24 OPERATORS SURVEYED OPERATING 1,492 BUSES,
   5 DIFFERENT MANUFACTURERS
   A. 17 ACCIDENTS - 28 PASSENGERS INJURED.
      60 MALFUNCTIONS
      BRAKES GRABBING AND LOCKING - FAIL TO STOP VEHICLE (LOSS OF BRAKES AT LOW SPEED)
      INCREASES STOPPING DISTANCE
      BRAKES ARE ERRATIC, UNRELIABLE
      BRAKES DRAG
      DIFFICULT STEERING DURING BRAKING

3. OILFIELD TRUCKING - BAKERSFIELD
   B. F. GOODRICH ANTISKID SYSTEM
   1975 KENWORTH TRUCK AND FRUEHAUF TRAILER
   ANTISKID INSTALLED IN FEBRUARY 1974 (PRIOR TO 121)
   A. MAY 30, 1975, DRIVER WAS INVOLVED IN ACCIDENT. HE REPORTED A TOTAL LOSS OF SERVICE BRAKE (NO REACTION FROM FOOT PEDAL).
   B. SUBSEQUENTLY NO REASON FOR FAILURE COULD BE FOUND.

4. FAIRBANKS TRUCKING - MODESTO

A. 1 VEHICLE JACKKNIFED OFF THE ROAD - NO PROPERTY DAMAGE.

B. NEW TRACTOR EQUIPPED WITH 121 - TRAILER NOT EQUIPPED:

CREATES PULLING TO LEFT OR RIGHT DURING STOPPING

5 TRACTORS - NUMEROUS MALFUNCTIONS IN WIRING AND COMPUTERS

FRONT SPRINGS ARE BLOCKED TO IMPROVE STEERING STABILITY WHEN STOPPING

5. PASADENA SCHOOL DISTRICT

SCHOOL BUS

A. 1 ACCIDENT

VEHICLE DECELERATED FROM 25 MPH TO 4.5 MPH, SOLENOID VALVE DUMPED AIR THEN BRAKES LOCKED.

B. PUPIL WAS INJURED STRIKING SEAT IN FRONT.

6. ORANGE COUNTY BUS SYSTEM

REPORTS A BRAKE FAILURE IN THE COMPANY YARD. BUS WENT THROUGH A FENCE. NO INJURIES.

THERE HAVE BEEN EXTENSIVE OPERATIONAL INCIDENTS, SUCH AS:

1. SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT (SCRTD)

A. MALFUNCTIONS REPORTED WITHOUT ACCIDENTS.

511 - TOTAL NUMBER OF FAILURES

170 - IN-SERVICE FAILURES

81 - OPERATORS COMPLAINED OF BRAKE PROBLEMS IN-SERVICE

B. COMPLAINTS.

BRAKES DUMPING AIR

BRAKE LOSS

BRAKES FADING

VEHICLE WILL NOT STOP

BRAKES DRAGGING AND BRAKES LOCKING

BRAKES GRAB AND WILL NOT RELEASE

C. TYPE OF REPAIRS PERFORMED.

151 - SENSORS CHANGED OR ADJUSTED

40 - COMPUTERS CHANGED

185 - FUSES CHANGED

135 - FAULTY CONNECTIONS AND MISCELLANEOUS FAILURES

2. ASLAN TRUCKING - HOLLISTER

30 - 1975 UTILITY TRAILERS

A. 59 RADIAL TIRES DESTROYED.
BRAKE LINING LIFE OF 8,000 MILES DUE TO FAILURES IN BRAKING SYSTEMS WITH 121 ARE HOOKED IN COMBINATION WITH PRE 121.

3. SACRAMENTO REGIONAL TRANSIT
103 FLEXIBLE BUSES
A. 15 COMPUTER FAILURES.
B. CONTINUOUS BLOWING FUSES.
C. 2 SENSOR FAILURES.
EXCITOR RINGS - IMPROPER CLEARANCE

4. SAFEWAY STORES
UTILITY TRAILERS
A. 43 FAILURES.
TRAILER AIR SUPPLY CONTROL (TASK VALVE FAILURE)

5. SAN FRANCISCO MUNICIPAL RAILWAY
AMERICAN MOTOR GENERAL
A. 4 BUSES.
BRAKE LINING LIFE 8,000 MILES
ANTISKID DEVICE FREQUENTLY INOPERABLE
BRAKES SEVERE WHEN ANTISKID NOT WORKING

6. NORWALK - LA MIRADA UNIFIED SCHOOL DISTRICT
CROWN COACH SCHOOL BUS
A. REPORTS REGULAR FUSE FAILURES - COMPUTER CHANGED WITH NO EFFECT.

MY DEPARTMENT HAS HAD THE OPPORTUNITY TO WITNESS TWO 121-EQUIPPED VEHICLE DEMONSTRATIONS ON THE FOLLOWING:

1. INTERNATIONAL HARVESTER - FORT WAYNE, INDIANA
SERGEANT L. ZIESE WITNESSED TESTS ON 121 AIR BRAKE SYSTEMS THAT CONFIRMS INDUSTRIES FINDINGS.
A. 3 TESTS OF TRUCK AND BUS CHASSIS.
1 - ANTILOCK SYSTEM FAILED
TIRES LOCK, FLAT SPOTS ON TIRES
WARNING LAMPS DID NOT INDICATE ELECTRICAL FAILURE
B. DURING HIGH SPEED (50 MPH) TEST ANTILOCK FUNCTIONED.
EXTREME BOUNCING AND JERKING
C. HIGH SPEED (50 MPH) STOP WITH SCHOOL BUS.
EXPELLED SO MUCH AIR LOW AIR WARNING LAMP AND BUZZER BEGAN TO OPERATE

2. WESCO TRUCK AND TRAILER SALES - WOODLAND
COMMERCIAL VEHICLE SECTION WITNESSED SEVERAL STOPPING DISTANCE TESTS OF VEHICLES WITH AND WITHOUT 121 SYSTEMS, LOADED AND EMPTY.
A. INSTANCES OF 121 SYSTEM.

GREATER STOPPING DISTANCE THAN UNEQUIPPED VEHICLES

FUSES FAILED

COMPUTER FAILED

1 INSTANCE BRAKES DID NOT WORK ON ONE AXLE (COMPUTER FAILURE)

YOU WILL NOTICE THE SIGNIFICANCE OF THIS DATA IS IT TENDS TO SUPPORT THE STATEMENT MADE IN THE FEDERAL REGISTER ANNOUNCEMENT FOR THIS MEETING THAT NHTSA BELIEVES THE "PROBLEMS DISCOVERED TO DATE RESULT FROM SPECIFIC DESIGN AND QUALITY CONTROL DEFICIENCIES AND ARE SUSCEPTIBLE TO ENGINEERING SOLUTIONS."

IF THIS IS TRUE, WHY DID THIS MASS OF MANUFACTURING DEFICIENCIES OCCUR? WE ARE NOT TALKING ABOUT INFREQUENT PROBLEMS ON A FEW MAKES OF VEHICLES, BUT EXTENSIVE DOCUMENTED OPERATIONAL DEFICIENCIES THAT HAVE OCCURRED ACROSS THE SPECTRUM OF VEHICLES PLACED INTO SERVICE UNDER 121 REQUIREMENTS. IN EVALUATING THIS INFORMATION, WE MUST ALSO ASK THE QUESTION, WHY DID THE FINEST ENGINEERS IN THE WORLD, USEING THE MOST MODERN MANUFACTURING PROCESSES, PRODUCE THOUSANDS OF VEHICLES WITH MECHANICALLY-DEFICIENT AIR BRAKE SYSTEMS IN COMPLIANCE WITH FMVSS 121? IS IT THAT WE DO NOT HAVE ADEQUATE AIR BRAKE EXPERTISE IN OUR TRUCK MANUFACTURING INDUSTRY, OR IS IT BECAUSE THE REQUIREMENTS AND PARTICULARLY THE TIME FRAMES MANDATED UPON THAT

INDUSTRY WERE UNREALISTIC AND INTERFERRED WITH THE NORMAL PROCESS OF DEVELOPMENT AND TESTING OF NEW EQUIPMENT? WE BELIEVE THAT TO BE THE CASE. WE BELIEVE THE TIME CONSTRAINTS PLACED UPON THE MANUFACTURING INDUSTRY TO IMPLEMENT THE REQUIREMENTS MANDATED BY NHTSA WERE UNREALISTIC AND EXCEEDED THE DEVELOPMENTAL ABILITIES OF THE INDUSTRY TO COMPLY WITH THOSE REQUIREMENTS. THIS PROBLEM OF TIMING WAS AN ISSUE BROUGHT TO THE ATTENTION OF NHTSA WHEN IN DECEMBER OF 1974 THE FEDERAL REGISTER ASKED FOR COMMENTS CONCERNING DELAY OF IMPLEMENTATION OF THE STANDARD. I HAVE BEEN ADVISED THE MAJORITY OF RESPONSES FROM THE MANUFACTURING INDUSTRY AND OTHERS, INCLUDING MY DEPARTMENT, RECOMMENDED AGAINST IMPLEMENTATION AT THAT TIME. HOWEVER, NHTSA CHOSE TO DISREGARD THAT ADVICE AND MAINTAINED THE JANUARY 1 AND MARCH 1, 1975 IMPLEMENTATION. IT IS INTERESTING TO NOTE ONE MAJOR MANUFACTURER CITED IN THE FEDERAL REGISTER ON BOTH DECEMBER 12, 1974 AND JANUARY 7, 1975, AS DESIRING TO PROCEED WITH THE IMPLEMENTATION, HAD TO RETROFIT THOUSANDS OF VEHICLES DUE TO AIR BRAKE MALFUNCTIONS.

I REALIZE THE IMPACT OF MY PRESENTATION TODAY MAY BE LESSENED BECAUSE OF THE FEW NUMBER OF ACCIDENTS I HAVE RELATED TO YOU. HOWEVER, I EARNESTLY HOPE THE NUMEROUS INCIDENTS OF EQUIPMENT DEFICIENCIES I HAVE RECOUNTED WILL

NOT BE TAKEN LIGHTLY. UNFORTUNATELY, WE BELIEVE THESE INCIDENTS OF DEFICIENCIES IN NEW 121 VEHICLES TO BE THE FORERUNNER OF MANY MAJOR ACCIDENTS AS THE VEHICLES BECOME MORE DANGEROUS THROUGH THOUSANDS OF MILES OF USAGE. THIS IS PARTICULARLY A CONCERN OF MY DEPARTMENT. OUR OPERATIONAL EXPERIENCE IN MANY YEARS OF EVALUATING COMMERCIAL VEHICLE ACCIDENTS AND MAINTENANCE PROGRAMS INDICATES OUR MOST SIGNIFICANT PROBLEM HAS NOT BEEN ERRATIC STOPPING AND JACKKNIFING CAUSED BY THE BASIC AIR BRAKE SYSTEM, RATHER, IT HAS BEEN ACCIDENTS CAUSED BY MAINTENANCE DEFICIENCIES SUCH AS IMPROPERLY ADJUSTED BRAKES. THERE IS LITTLE DOUBT THIS PROBLEM OF MAINTENANCE WILL BE COMPOUNDED BY THE HIGHLY COMPLEX FMVSS 121 AIR BRAKE SYSTEMS.

MY PURPOSE IN BEING HERE TODAY IS TO PROVIDE INTERPRETATIVE TESTIMONY THAT THERE ARE PROBLEMS RESULTING FROM THE FMVSS 121 STANDARD. IT IS THE OPINION OF MY DEPARTMENT THE PROBLEMS ARE PRINCIPALLY CAUSED BY NHTSA MANDATING THE STANDARD BEFORE INDUSTRY HAD SUFFICIENT TIME TO PROPERLY DESIGN, TEST AND MANUFACTURE SAFE VEHICLES UTILIZING THE NEW REQUIREMENTS. THIS IS NOT TO SAY THE BASIC THEORIES OF THE STANDARD FOR IMPROVED STOPPING AND PREVENTION OF WHEEL LOCKUP ARE NOT EXCELLENT CONCEPTS FOR PERFORMANCE STANDARDS. I DO NOT BELIEVE THE

SITUATION IS HOPELESS. THE PROBLEM CAN BE RESOLVED, BUT IT WILL TAKE EXTENSIVE WORK ON BEHALF OF MANY PEOPLE. I BELIEVE THE SOLUTION MUST START WITH AT LEAST A TEMPORARY WITHDRAWAL OF FMVSS 121 REQUIREMENTS AND A MODIFICATION OF THE STANDARD BEFORE IT IS REIMPLEMENTED SPECIFYING PERFORMANCE CRITERIA RATHER THAN INDIVIDUAL DESIGN FEATURES. IDEALLY, AS A STATE REGULATORY OFFICIAL, I WOULD PREFER IT BE MODIFIED TO ELIMINATE THE PREEMPTION OF OUR LAWS AND REGULATIONS. TO THAT END, MY DEPARTMENT, ON JULY 17, 1975, PETITIONED NHTSA TO CHANGE THE STANDARD AND PROVIDE EXTENSIVE MODIFICATION IN LINE WITH CURRENT REQUIREMENTS AND MANUFACTURING EXPERTISE IN THE FIELD OF AIR BRAKE SYSTEMS. WE STRONGLY URGE NHTSA TO TAKE PROMPT ACTION ON THIS SERIOUS SITUATION BEFORE THE MASS OF INCIDENTS THAT I HAVE COMMENTED ON ARE REPLACED BY EQUAL NUMBERS OF ACCIDENTS, AND FMVSS 121 BECOMES A MAJOR DETERRENT TO SAFETY ON HIGHWAYS RATHER THAN IMPROVING THAT SAFETY AS I AM SURE IT WAS INTENDED TO DO.

Supreme Court, U. S.
FILED
AUG 10 1978
MICHAEL RODAK, JR., CLERK

IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

No. 78-95

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION AND DEPARTMENT OF TRANSPORTATION,
Petitioners

v.

PACCAR, INC., *et al.*

BRIEF OF TRUCK EQUIPMENT AND BODY DISTRIBUTORS ASSOCIATION (TEBDA) IN OPPOSITION TO PETITION FOR A WRIT OF CERTIORARI

GEOFFREY R. MYERS
HALL AND MYERS
Suite 200
10,000 Falls Road
Potomac, Maryland 20854
Attorney for TEBDA

Of Counsel:

WILLIAM D. HALL
HALL AND MYERS

WILSON - EPES PRINTING CO., INC. - 789-0096 - WASHINGTON, D.C. 20001

INDEX

	Page
Statement of the Case	1
A. TRUCKS ARE BUILT IN STAGES, THE FINAL STAGE OF NECESSITY TAKING PLACE AT THE LOCAL LEVEL BY SMALL BUSINESSES—TEBDA'S MEMBERS	1
B. TEBDA'S COMPLAINT LIMITED TO ONLY ONE PROVISION OF THE STANDARD AND ONLY AS IT WAS APPLIED AGAINST THE FINAL STAGE MANUFACTURER	7
C. NINTH CIRCUIT DECISION IN TEBDA'S CASE IS BASED UPON THE SPECIAL LIMITED FACTS OF THAT CASE, NO ISSUES OF LAW BEING IN DISPUTE	10
Argument	13
A. THE NINTH CIRCUIT'S LIMITED OPINION BASED UPON FACTUAL INQUIRY OF AN EXTENSIVE RECORD DOES NOT WARRANT THIS COURT'S INTERVENTION	13
B. TEBDA'S MEMBERS ARE IN AN UNTENABLE POSITION DUE TO PETITIONERS' ACTIONS AND THE GRANTING OF THE PETITION WOULD MATERIALLY WORSEN THE SITUATION AND DETERIORATE HIGHWAY SAFETY	14
C. PETITIONERS' REASONS FOR GRANTING THE PETITION RAISE ISSUES NOT PRESENTED AND ARE INSUFFICIENT	16
Conclusion	19

CITATIONS

Cases:	Page
Chrysler Corp. v. *Department of Transportation*, 472 F.2d 659, 675 (CA6, 1972)	8
Citizens to Preserve Overton Park, Inc. v. *Volpe*, 401 U.S. 402, 91 S. Ct. 814, 28 L. Ed. 2d 136 (1971)	11
Haske et al v. *Scientific Brake Co. et al*, Civil Action No. 77-0015-3-NI, Circuit Court Saginaw County, Michigan	15
Statutes and Regulations:	
15 U.S.C. 1381, et seq.	8
15 U.S.C. 1392(a)	8, 9, 11
15 U.S.C. 1397	8, 12
15 U.S.C. 1397(a)(1)(C)	11
15 U.S.C. 1397(c)	8
15 U.S.C. 1398	8
15 U.S.C. 1400	12
15 U.S.C. 1403	8

IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

No.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION AND DEPARTMENT OF TRANSPORTATION,
Petitioners

v.

PACCAR, INC., *et al.*

BRIEF OF TRUCK EQUIPMENT AND BODY DISTRIBUTORS ASSOCIATION (TEBDA) IN OPPOSITION TO PETITION FOR A WRIT OF CERTIORARI

Respondent, Truck Equipment and Body Distributors Association (called TEBDA) files the following Brief in opposition to Respondents' Petition for a Writ of Certiorari.

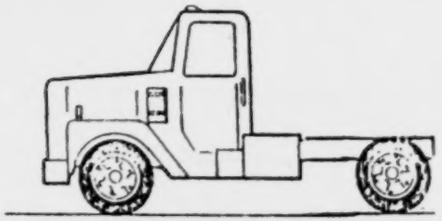
STATEMENT OF THE CASE

A. TRUCKS ARE BUILT IN STAGES, THE FINAL STAGE OF NECESSITY TAKING PLACE AT THE LOCAL LEVEL BY SMALL BUSINESSES—TEBDA'S MEMBERS

In order to appreciate the logic and correctness of the Ninth Circuit Court of Appeals' Opinion, it is neces-

sary to understand the often misunderstood structure of the truck-building industry. The following description, found in TEBDA's Brief to the Ninth Circuit, pages 3-9, presents, in summary form, the structure of this industry and is properly not disputed by Petitioner:

—The average layman usually assumes that trucks [covered by MVSS-121] are produced by GM, Ford, PACCAR, International Harvester, Mack, etc. This is incorrect. These companies mass produce various standardized models of a "chassis-cab". The following illustration is a typical example of a chassis-cab:



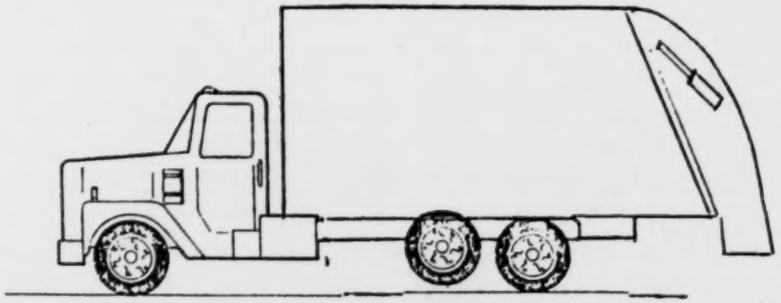
CHASSIS-CAB

Sometimes instead of one rear axle, GM, etc., will provide two (called a tandem). But in either event one can see that "chassis-cabs" are bare bones items capable of being produced by highly efficient mass production assembly line techniques. PACCAR [Co-Respondent] represents this segment of the truck-producing industry, i.e., the first vital segment which mass produces a "chassis-cab". NHTSA's [Petitioner] regulations refers to this segment as "incomplete vehicle manufacturers".

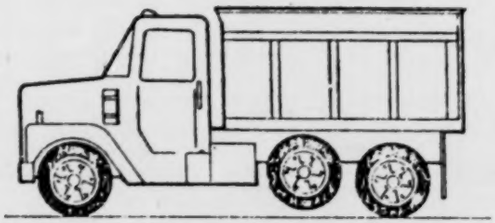
The second vital segment in the production of a *truck* is represented by TEBDA. This segment takes a "chassis-cab" and installs on it a body, add-on axle and cross-members and does the necessary frame and other work,

thereby to build a *truck* to meet local specifications, needs, safety requirements and laws.

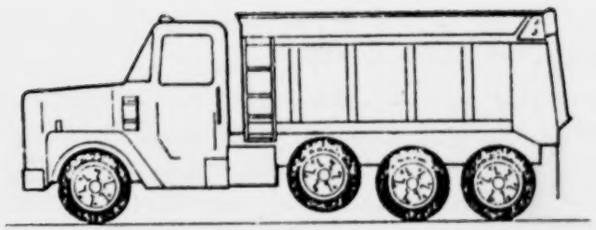
This second segment is referred to in NHTSA's regulations as "intermediate" or "final stage" manufacturers (hereinafter referred to as *final stage* manufacturers since the difference is irrelevant for this litigation). The final stage manufacturing segment of the truck-producing industry is generally comprised of about 2500 small independent local businesses having annual sales volumes of less than three million dollars ($3,000,000) and averaging about seventeen (17) employees. The following are exemplary of typical *trucks* produced by TEBDA's segment of the industry:



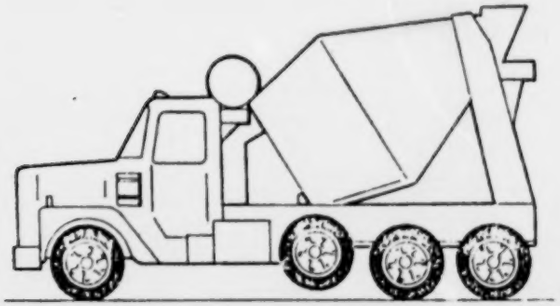
GARBAGE TRUCK
(Garbage Collector, Add-on Lift Axle, Extended Frame)



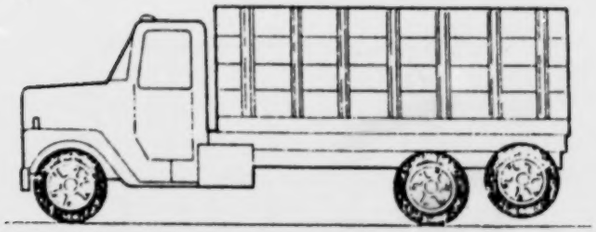
DUMP TRUCK
(Dump Body, Add-on Lift Axle)



DUMP TRUCK
(Dump Body, Add-on Axles, Extended Frame)



CEMENT TRUCK
(Cement Mixer, Add-on Axles, Extended Frame)



GRAIN TRUCK
(Grain Body, Add-on Tag Lift Axle, Extended Frame)

As can be seen, a *truck* within the correct meaning of this word is a combination of: (1) a chassis-cab selected from among several chassis-cab models and makes, (2) a utility body designated for a specific end use and (3) add-on equipment such as lift axles to meet local safety and weight law requirements, to maximize profit and to minimize in many instances fuel consumption. The work done to combine these components usually entails lengthening or shortening air hoses, moving equipment and/or lengthening the chassis-cab frame.

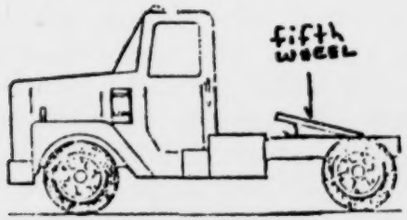
The importance of producing trucks in two stages is apparent. Mass production of standardized models of chassis-cabs keeps costs down, provides efficiency and insures uniformity of the basic component of the truck. But this cannot be done at the second stage. Differences in state weight laws, local terrain, weather conditions and end uses mandate that trucks be constructed and customized at the local level. Slag haulers for the hot steel slag pits of Ohio are not constructed the same way as urban garbage collectors that must maneuver the narrow streets of San Francisco or New York, or the grain vans of our mid-western flat wheat belt. TEBDA's members are highly skilled local craftsmen, trained in local needs, laws, and conditions, who perform this vital second step which results in the production of a *truck* safe and economically useful in commerce.

The free enterprise system maintains rigorous non-oligopolized competition via these local, independent truck builders through the choice to the consumer of many models and makes of chassis-cabs, bodies, add-on axles (to increase load-carrying capacity) and other add-on equipment. The independent, local final stage manufacturer, therefore, deals on a day-to-day basis with hundreds of permutations and combinations of chassis-cabs, bodies, add-on equipment and manufacturing techniques to custom build each *truck* to meet local needs. Since he is

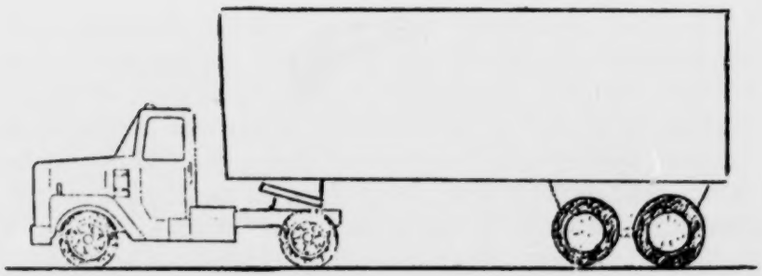
local and *small* he is also uniquely responsive and susceptible to customer complaints and local judicial proceedings.

A hybrid vehicle, legally considered a *truck* under MVSS-121 [the Standard in question here], but not truly one, is a "chassis-cab" which has mounted on it a "fifth wheel". A fifth wheel is a large metal disc which allows a trailer to be connected to the vehicle. The proper term for such a vehicle is a *tractor*, and not a truck. A typical picture of a *tractor* is as follows:

When a *trailer* is hooked to it, it usually appears on our high-speed highways as something like the following picture:



TRACTOR



TRACTOR-TRAILER COMBO.

Petitioner [Co-Respondent] ATA, represents the users (consumers) of these over-the-road tractor-trailers. While TEBDA's members install fifth wheels, such is a rather simple task and the consumer can at times acquire this add-on part and thus a *tractor* from the chassis-cab manufacturer or his franchised dealer. Little if any local (terrain, use, etc.) considerations come into play when installing a fifth wheel.—

As to this structure and TEBDA's standing, the Ninth Circuit made the following correct and undisputed finding of fact in its Opinion:

> "TEBDA represents approximately half of the 'intermediate' and 'final stage' manufacturers in this country. The 'first stage' or 'incomplete' manufacturers build the truck chassis, and TEBDA members modify that chassis to produce dump trucks, cement trucks, garbage trucks, and other trucks." (Pet. 29a-30a)

B. TEBDA'S COMPLAINT LIMITED TO ONLY ONE PROVISION OF THE STANDARD AND ONLY AS IT WAS APPLIED AGAINST THE FINAL STAGE MANUFACTURER

Motor vehicle Safety Standard, MVSS-121 (Pet. 44a et. seq.) is a lengthy and complex standard which prescribes extensive braking equipment and characteristics, and stopping distance requirements for air-braked trucks, tractors and trailers manufactured as described above.

The vast portion of MVSS-121 was uncontested by any of the Respondents and was left, properly, in tact by the Ninth Circuit. Among those provisions unquestioned, for example, are the extensive provisions for: safety equipment such as air compressors, pressure guages, reservoirs, etc.; service brakes and testing thereof; emergency brakes; and parking brakes.

TEBDA complained in its case of nothing in Motor Vehicle Safety Standard No. 121, except the road test requirements as set forth in § 5.3 et. seq. (Pet. 49a et. seq.) and then, only as they apply to the final and intermediate stage manufacturer. The term "final stage" manufacturer was used to cover both for purposes of this litigation and is so used here.

Under § 1397 (Pet. 39a) and § 1403 (Pet. 40a) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1381, et. seq., Pet. 34a) and Petitioners' implementing regulations whether old or new (Pet. 30a), in practical effect, for about 90% of all trucks produced, it is the undisputed duty of the final stage manufacturer to certify each truck he produces as complying with every condition specified in MVSS-121, including the fact that if the truck is run through the complex road testing of § 5.3, et. seq., the truck will meet or exceed the required results. Failure of the truck to pass the test or failure of the certifier to use "due care" in ascertaining compliance before certifying, subjects the offender to severe civil penalties, including fines of up to $800,000. (15 U.S.C. 1397 and 1398; Pet. 39a, et. seq.)

Practically speaking, then, Petitioner has the power, through the assessment of a sufficiently large penalty, to put many, if not most, independent, final stage manufacturers out of business if the trucks which they produce are found, when road tested by Petitioner, not to meet the Standard or if they were not certified with "due care" (§ 1397(c); Pet. 39a-40a).

Because of the severity of the penalty, there is a compelling statutory requirement in § 1392(a) (Pet. 34a) that any standard must be set forth in "objective terms". As the Sixth Circuit stated in *Chrysler Corp.* v. *Department of Transportation*, 472 F. 2d 659, 675 (CA6, 1972):

> "The importance of objectivity in safety standards cannot be overemphasized. The Act puts the burden upon the manufacturer to assure that his vehicles comply under pain of substantial penalties. In the absence of objectively defined performance requirements and test procedures, a manufacturer has no assurance that his own test results will be duplicated in tests conducted by the Agency. Accordingly, such objective criteria are absolutely necessary so that 'the question of whether there is compliance with the standard can be answered by objective measurement and without recourse to any subjective determination.'"

The correctness of this legal principle is undisputed and is not in issue here.

In addition to the requirement for "objectivity", the Act, 15 U.S.C. 1392(a) (Pet. 34a) requires that a standard must be "practicable". All agree that the term "practicable" means "feasible in the circumstances". (Pet. 16, fn. 10). Of necessity, then, a judicial determination of "practicable" requires a factual inquiry into the circumstances of the particular situation.

After unsuccessfully making administrative complaints to the Agency, TEBDA complained to the Ninth Circuit (via statutory transfer from the Sixth Circuit) that under the circumstances of the final stage manufacturer, the road test requirement was not "practicable". In point of fact, Petitioner, during the administrative period had admitted to facts which compelled a finding that the road test was economically and physically impossible for the final stage manufacturer to conduct.[1] Petitioner, itself, never disputed this fact and, in effect, admitted it. Yet the standard specified no alternative, but to road test each truck.

The incumbents in NHTSA at the time, faced with these compelling facts and their own admissions, took

---

[1] Pet. 30(a), fn 59 Letter to Senator Warren G. Magnuson; 31a, fn 60.

the position that the final stage manufacturer did not have to road test each vehicle because some *unspecified* form of "sample" or "group" testing, mathematical calculations, or the like might be used in place of actually conducting the road tests (Pet. 31a, fn 60) to determine compliance—*with the proviso*, of course, *that* the user of these alternatives could be fined or penalized if, after using them, NHTSA were to review them and find that they did not constitute a "due care" technique, or the truck when tested did not pass the road test.

The problem, of course, as pointed out by TEBDA, was that any "sample" or "group" testing, mathematical calculations (which necessitate gross assumptions) and the like, by definition are *subjective* and give no assurance, with objectivity, that each truck to which they are related actually meets the road test results after being built.

NHTSA specifically and repeatedly refused to publically specify or endorse even one alternative approach (if, indeed, there is one) which the final stage manufacturer could use in place of the road test, leaving TEBDA's members to guess, under penalty of being put out of business if they guessed wrong, as to how to certify their trucks by subjective techniques. TEBDA countered that such guess work, even if it could be in some way accomplished, thus, satisfying the test of "practicable", relegated the final stage manufacturer to a "non-objective" attempt to comply and thus, violated the "objective" criteria of the statute.

C. NINTH CIRCUIT DECISION IN TEBDA'S CASE IS BASED UPON THE SPECIAL LIMITED FACTS OF THAT CASE, NO ISSUES OF LAW BEING IN DISPUTE

Petitioner readily admits that the appropriate rules of law were applied by the Ninth Circuit. For example, page 1 of the Petition states:

> ". . . a decision such as this turns more on the application of acknowledged principles to particular facts than on any dispute about the controlling legal rules."

The controlling "legal rules" in TEBDA's case, as applied by the Ninth Circuit are, of course, that MVSS-121 must be both "practicable" and "objective". (15 U.S.C. 1392(a), Pet. 34a). In reviewing the Agency's determination in this regard, the Ninth Circuit specifically used the restricted reviewing criteria prescribed by this Court in *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, 401 U.S. 402, 91 S. Ct. 814, 28 L.Ed.2d 136 (1971). (See Pet. 6a).

Whether the road test requirement of MVSS-121 as it applied to the final stage manufacturer is "practical" and "objective" is obviously a factual determination. After a thorough and searching analysis of the extensive record in this case, covering many thousands of pages and dealing with the total aspects of all three cases, the Ninth Circuit held in TEBDA's case:

> "It is undisputed that it would be economically unfeasible for TEBDA members to road test each vehicle they complete.[59] [2] TEBDA argues, however, that its manufacturers run the risk of violating the "due care" provision of 15 U.S.C. § 1397(a)(1)(C) if they do not road test, since road testing is the only method NHTSA has specified whereby manufacturers can ensure that their vehicles are properly certified.
>
> NHTSA asserts that road testing is not required of the manufacturers, and it is only necessary that any truck manufactured meet the test that it

[2] Footnote 59 of the Opinion reads: "There are only four tests tracks in the United States, and the cost of testing each vehicle is between $2000 and $4000. Letter from NHTSA to the Honorable Warren G. Magnuson (May 1975)."

performs. According to the agency, due care could be satisfied by any number of alternative methods, such as group testing, mathematical calculations, and so forth.[60] [3] TEBDA contends that, since such alternatives are not contained in the regulations, its manufacturers have no assurance that these alternatives will ultimately be found to comply with the due care requirement.

In our opinion, the plain statutory mandate of "practicability" and "objectivity" is not met by agency "suggestions" of what might constitute compliance with the amorphous due care standard. Since NHTSA has admitted that road testing is beyond the practical and financial reach of the final stage manufacturers, it must propose some alternative method for those manufacturers which, if followed, it will recognize as fulfilling the due care requirement.

Our decision in no way invalidates the testing procedures, nor does it affect the requirement that each vehicle sold to a distributor or dealer must conform to a legally appropriate standard. 15 U.S.C. § 1400. We hold only that this regulation is neither "objective" nor "practicable" because it could subject intermediate and final stage manufacturers to the penalties of 15 U.S.C. § 1397 simply because they could not perform the only procedure specified in the regulations for fulfilling the due care provision. Statutes prescribing penalties, civil or criminal, must be drafted without ambiguity. Successive authorities of NHTSA might take an entirely different view than that announced by the incumbents, and subjecting the manufacturers to such risk does not comport with due process requirements. (Pet. 30a-32a).

---

[3] Footnote 60 of the Opinion reads: "Letter from NHTSA to TEBDA (Apr. 16, 1975); Letter from NHTSA to TEBDA (Mar. 6, 1975) (denial of Petition for Rehearing); NHTSA References."

ARGUMENT

A. THE NINTH CIRCUIT'S LIMITED OPINION BASED UPON FACTUAL INQUIRY OF AN EXTENSIVE RECORD DOES NOT WARRANT THIS COURT'S INTERVENTION

The decision of the Ninth Circuit as it relates to TEBDA's case is a limited one, based solely on the specific facts of the case, there being no material issue of law involved. The decision specifically does not invalidate the road test of § 5.3 et seq., leaving it fully in tact. It merely states that as to a final stage manufacturer who must certify the finished truck under the regulatory scheme prescribed by Petitioner (Pet. 30a), Petitioner must place in the Standard at least one "practicable" and "objective" alternative to the road test requirement, that a final stage manufacturer can perform to determine if he complies with the standard.

Since Petitioner has argued that the standard can be satisfied with a number of unspecified methods such as "group testing, mathematical calculations, and so forth" (Pet. 31a), all Petitioner needs do is specify one in the Standard by Amendment to insure practicability and objectivity. That process would take but a few months of administrative rulemaking time. In point of fact, this simple amendment process of what amounts to a small portion of one of a plethora of standards promulgated by Petitioner, could be accomplished in significantly less time than it would take this Court to hear and decide this case.

The logic of the factual finding and ruling of the Ninth Circuit is blatantly apparent on the fact of this case. Intervention by this Court would merely serve to delay the inevitableness of this logic going into effect.

B. TEBDA'S MEMBERS ARE IN AN UNTENABLE POSITION DUE TO PETITIONERS' ACTIONS AND THE GRANTING OF THE PETITION WOULD MATERIALLY WORSEN THE SITUATION AND DETERIORATE HIGHWAY SAFETY

As described above, TEBDA's members, the final stage manufacturers, use the chassis-cabs provided to them, to complete the trucks. The anti-lock brake componentry mandated by MVSS-121 comes with these chassis-cabs. TEBDA's members have no control over this componentry. Yet because of the adoption of the product liability doctrine of "strict liability" in almost all states, TEBDA's members are liable for damages arising out of accidents caused by defective anti-lock componentry.

When the defects occur, of course, there are no brakes, and it takes little imagination to picture the nature of the accidents. This problem is compounded for TEBDA's members because they have no way of doing the road test—the only technique specified in the Standard for telling if the truck stops as required—they are usually the *last* manufacturer of the completed truck. They are also immediately accessible to local judicial jurisdiction.

After an exhaustive and lengthy inquiry into the thousands of pages of the record of this case, primarily necessitated in order to decide the cases of PACCAR and ATA as regards anti-lock, the Ninth Circuit confirmed what Congressional staffs, test studies, state highway patrols and others had already found:

> ". . . , the comprehensive data before us indicate that there is a strong probability that the performance of a substantial number of vehicles whose braking systems have been altered to include "overpowered" front axles and anti-lock devices has created a potentially more hazardous highway situation than existed before the Standard became operative." (Pet. 26a)

TEBDA's members are on the local firing line when these hazardous brakes fail, yet they have no control over the fact that they are on the chassis-cab used to complete the truck.

Eaton Corporation, in co-operation with Petitioner, just recently announced a recall of 45,000 anti-lock brakes. According to Congressional staff findings, this amounts to 20% of the anti-lock brakes now on our highways. Many accidents and near misses have been and are being reported. According to Congressional staff findings, 18 deaths have already been directly attributed to anti-lock brake failure, and suits against final stage manufacturers are being brought.[4] The Ninth Circuit, itself, cites a plethora of support for its finding throughout its decision.

To make the situation even more egregious is the fact that the Petitioner, itself, after recently calling off anti-lock requirements as they relate to buses and school buses for safety reasons, is currently in rulemaking, ordered by the Secretary of Transportation, to call a moratorium on anti-lock for trailers. Yet callously, Petitioner stayed the mandate of the Ninth Circuit and announced it would continue to enforce the full measure of MVSS-121 while it sought this Petition.

It is also to be pointed out that the Ninth Circuit's decision does not preclude the use of anti-lock technology. Firstly, there is nothing in the decision which says that it cannot continue to be used. If, under the free enterprise system, a consumer wants anti-lock, he is free to buy and use it. All the decision says is, that until reliable, it should not be universally mandated. In addition, the Ninth Circuit said that Petitioner could remandate anti-lock, rather than continuing to leave it to

---

[4] See for example, *Haske et al* v. *Scientific Brake Co. et al*, Civil Action No. 77-0015-3-NI, Circuit Court Saginaw County, Michigan.

the free enterprise system, once it ascertains that anti-lock technology was reliable. The Court stated this latter point most eloquently:

> ". . . until such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the anti-lock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid. The agency may, of course, continue to propose new standards, including promulgation of new stopping distance requirements to replace those here invalidated. We hold only that more probative and convincing data evidencing the reliability and safety of vehicles that are equipped with anti-lock and in use must be available before the agency can enforce a standard requiring its installation." (Pet. 26a).

NHTSA is holding off on all further action, pending a decision on this Petition. If this Petition were granted, NHTSA would presumably continue to hold off on further study. Highway safety is, thus, in serious jeopardy. Yet in the time it would take to hear this appeal, an appropriate study could be made that would either evolve a better brake system which should be required or leave anti-lock to those areas of the free market place where it is desired and can hopefully be safely used.

C. PETITIONERS' REASONS FOR GRANTING THE PETITION RAISE ISSUES NOT PRESENTED AND ARE INSUFFICIENT

At page 2 of the Petition, Petitioner states that the two questions presented are (1) whether it acted arbitrarily in deeming MVSS-121 to be "practicable" and (2) whether Petitioner must conduct independent tests to

insure that a safety standard promotes rather than deteriorates highway safety.

Presumably correlated to these two questions are the two Reasons for Granting the Petition found at page 14 of the Petition. The first Reason basically states that Petitioner deems the standard to be practicable and the Ninth Circuit was in error on the facts when it ruled otherwise. Petitioner freely admits (Pet. 14) that the Ninth Circuit applied the proper legal criteria for review.

The second reason basically states that the Ninth Circuit was in error when it ruled that NHTSA had mandated, without sufficient investigation, the use of a system that was showing up during public use as a dangerous product. Petitioner, however, makes out a very weak showing in this regard compared to the Ninth Circuit's extensive citation from the record.

Boiled down to its relevant essentials, Petitioner is merely attempting to reargue its side of the facts—a side which the Ninth Circuit after an extensive, lengthy and thorough analysis of the record, and admittedly using the appropriate appellate criteria of review, did not accept. Thus, unless this Court feels it is of such national importance to engage in a judicial review of the voluminous record of this case and redecide that which it took the Ninth Circuit almost two years to decide following final briefing, this Petition should be denied.

Realizing, perhaps, that this Court rarely expends its valuable time on factual re-investigations of small portions of an agency's regulations, Petitioner is attempting to conjure issues from the Ninth Circuit's Opinion that simply do not exist.

For example, under its first question, and after admitting that the proper scope of review was applied (Pet. 14), Petitioner asserts that in holding the road tests impracticable as applied to the final stage manu-

facturer, the Ninth Circuit was actually holding that Petitioner could no longer determine what is and what is not "due care" under the Standard. Probatively, Petitioner fails to cite a single quote from the Opinion in support of this contention. In point of fact, the Ninth Circuit's Opinion never even impliedly raises such a specious issue. And such a contention, to be blunt, distorts beyond all reason the Ninth Circuit's clear and eloquent statement of the case.

Nowhere does the Ninth Circuit question the propriety of statutory "due care". Nowhere does it question or contest NHTSA's authority to investigate and determine whether an individual has used "due care" in certifying a truck—and penalize him if he has not. Nowhere does it restrict "due care" to the use of any particular technique, test or other method—whether specified in the Standard or not. Nowhere does it seek to tell NHTSA that it can or cannot proceed by regulation or on a case-by-case basis to implement statutory "due care". Nowhere does it say or imply that "due care" is unlawfully ambiguous.

The Ninth Circuit merely holds that to be "practicable" the Standard must be implementable by those who will be fined and penalized for not implementing it. In this case a truck, to be lawful, must have certain characteristics defined by the results of a road test. The stage of the industry which will be fined and penalized if a truck does not pass the road test, cannot do the road test. Thus, as to this segment of the industry, rules the Ninth Circuit with infinite logic, the road test is not "practicable". No issue of "due care" whatsoever, arises.

The Ninth Circuit also holds that Petitioner cannot save the road test from its ruling of not being "practicable" by unofficial assurances of then existing agency officials, that the industry is free to invent some unapproved, nonobjective alternative to the road test. The

Ninth Circuit rules that such an informal approach by government officials lacks statutorily required "objectivity". Again, no issue of "due care" arises. In short, "due care" is not an issue in this case.

The other issues raised by Petitioner, such as its allegations that the Ninth Circuit's Opinion in reality requires NHTSA to independently test a new technology, are likewise without merit. Again, it is probative to note the lack of significant citation of the Ninth Circuit's Opinion by Petitioner to establish any of its points—other than to disagree with the fact finding of the Opinion and thereby to reargue the facts. And, in regard to this fact finding, a comparison of the detailed footnoting and reliance on the record by the Ninth Circuit compared to the unsupported allegations of Petitioner is well worth reflection on, in determining whether to grant the Petition.

CONCLUSION

The Petition for Writ of Certiorari should be denied.

Respectfully submitted,

/s/ Geoffrey R. Myers
GEOFFREY R. MYERS
HALL AND MYERS
Suite 200
Free State Bank Building
10,000 Falls Road
Potomac, Maryland 20854

Attorney for TEBDA

Of Counsel:

WILLIAM D. HALL
HALL AND MYERS

August 1978